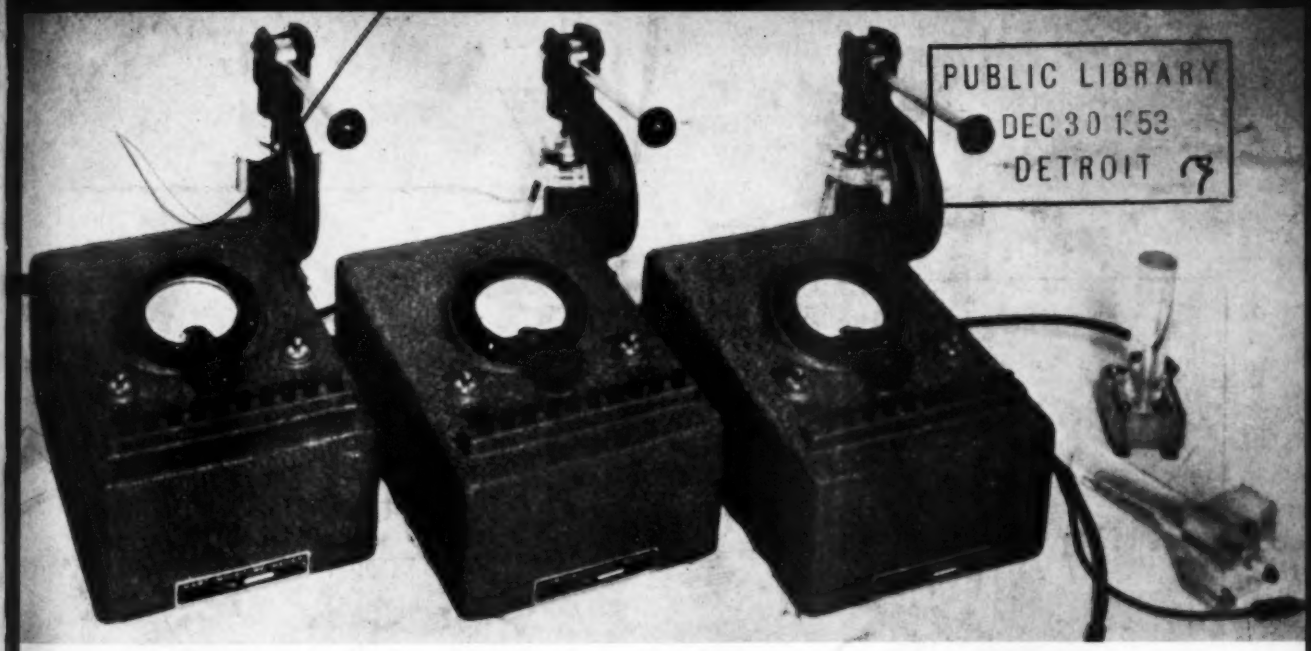
The

DECEMBER 1953

MARKETING TRENDS
with
MAP SUPPLEMENT



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DETROIT

NEW APPLICATIONS FOR THE YARDSTICK OF MOISTURE PERCENTAGE

• A new model designed especially for making accurate determinations in sheets stacked in a pile on skids—not a mere surface indication but a true determination of moisture percentage down to one quarter of one percent and at a point deeply into the center of the stack without disturbing the stack in any way—temperature compensated. Areas up to 20" into the stack can be accurately gauged.

The three instruments in the picture above look alike but are not exactly alike. One is for application to paper and board, giving average moisture percentage or condition of re-wet surface. The next is provided with means for applying an electrode anywhere over the surface of large sheets. The third meter is for starch or other powdered or bulk materials.

HART-MOISTURE-METERS

SUITE 1948—GRAND CENTRAL TERMINAL
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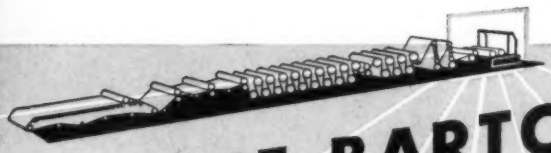
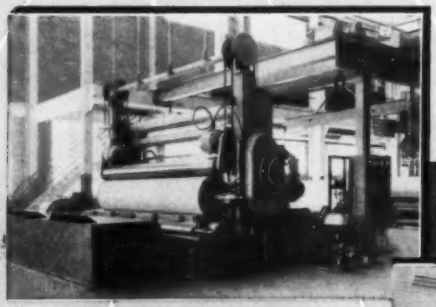
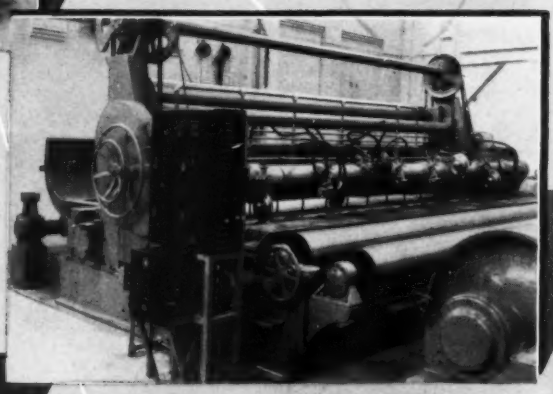
Over a MILE a MINUTE

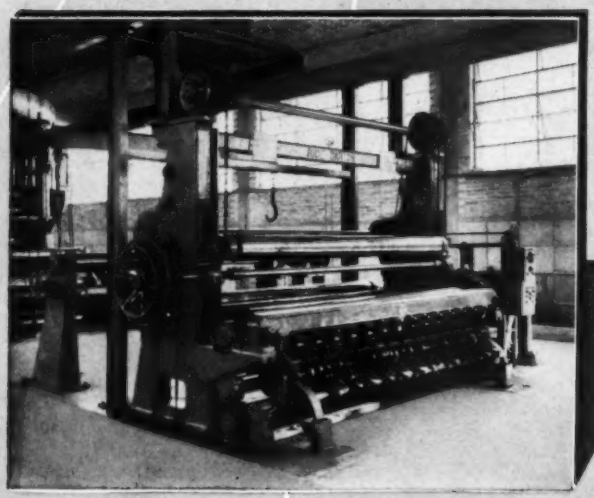


RICE BARTON WINDERS

Handle ALL GRADES • ALL WIDTHS • ALL SPEEDS!







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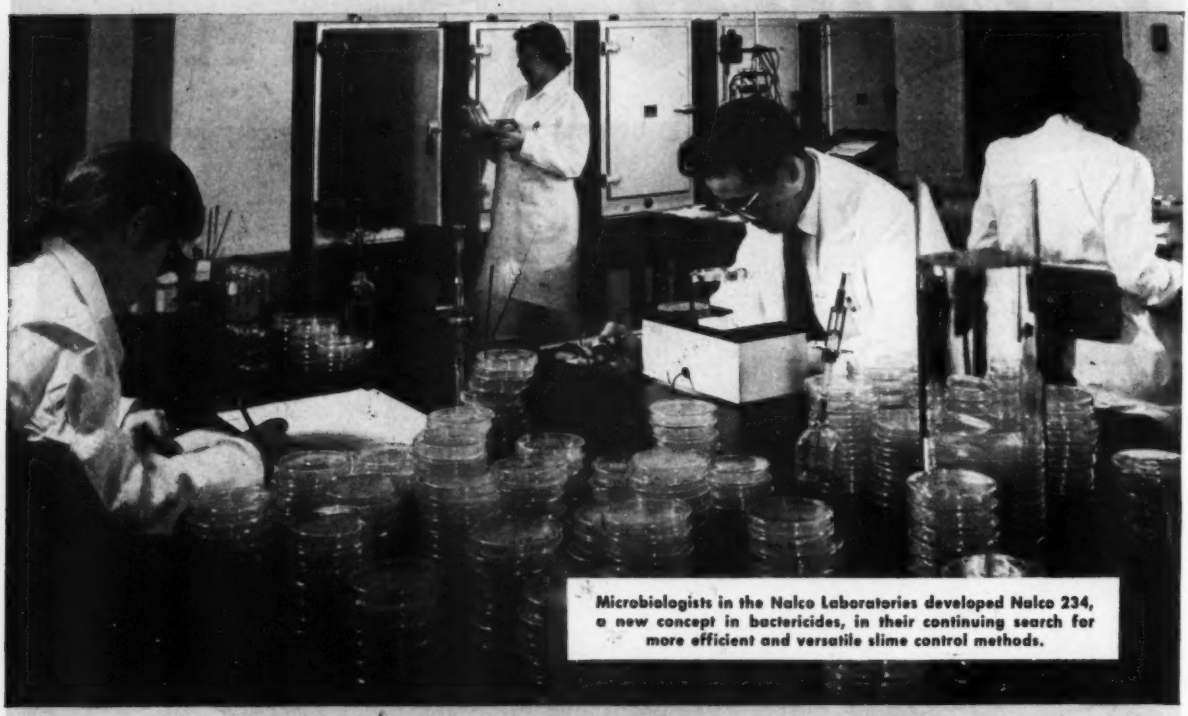
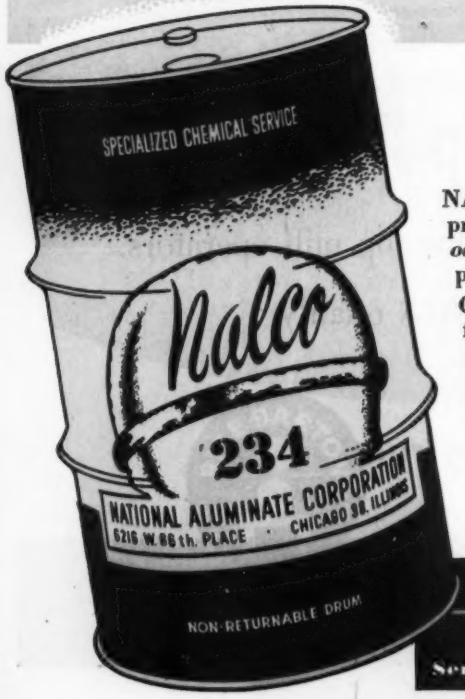


Microbiologists in the Nalco Laboratories developed Nalco 234, a new concept in bactericides, in their continuing search for more efficient and versatile slime control methods.

Fast Action SLIME CONTROL



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NALCO 234 is a new organic liquid formulation, developed and proved to meet an industry-wide need for a *quick-killing, non-odorous* bactericide for maintaining clean systems in all types of papermaking—including food packaging and sanitary papers.

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Serving the Paper Industry through Practical Applied Science

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VOLUME 35 • NUMBER 9 • DECEMBER, 1953

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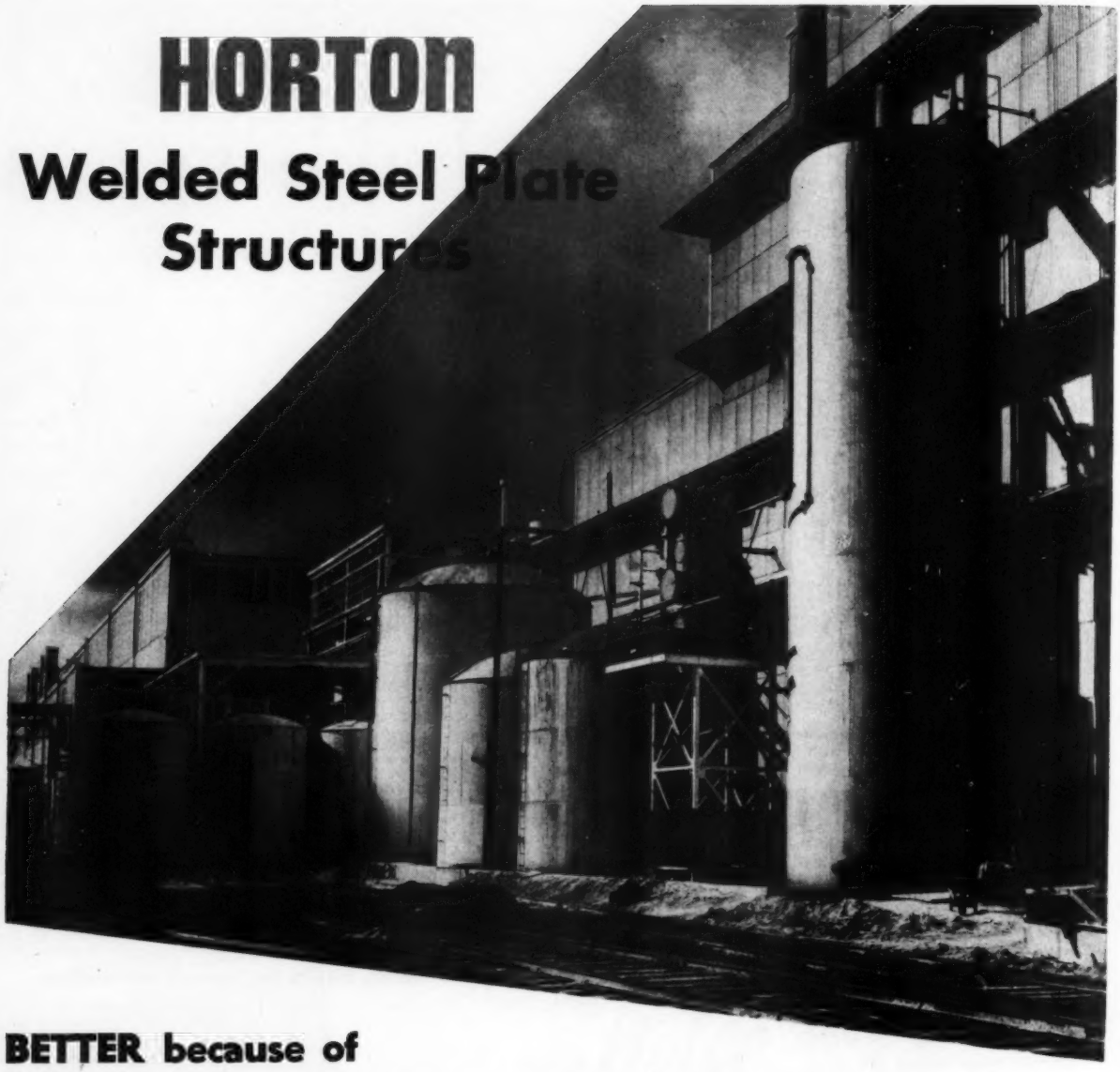
HORTON

Welded Steel Plate Structures



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Every welded steel plate structure built by Chicago Bridge & Iron Company receives the benefits of our Field Welding Supervisory Service. It is the job of the Supervisory Service to assist with cutting, inspecting and grading the proper number of test plugs . . . to help with the magnafluxing, x-raying and stress-relieving welded joints, when called for by governing specifications and to check welding equipment and welding techniques in use on a job. CB&I Field Welding Supervisory Service does everything possible to help build a better structure for you . . . *at no extra cost to you!*

Chicago Bridge & Iron Company has complete facilities for designing, fabricating and erecting steel plate structures for the pulp and paper industry. When planning replacements or new construction, investigate our experience and facilities. Write our nearest office for further information, estimates or quotations.

Above, left to right: Three 12-ft. diam. by 15-ft. caustic tanks; a 24-ft. diam. by 30-ft. black liquor tank; two 20-ft. diam. by 18-ft. black liquor tanks; and a 14-ft. diam. by 50-ft. accumulator tank, all at a Southern pulp mill.

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Entirely new design and type of construction provides increased efficiency, more uniform drying, reduced back pressure, improved working conditions and substantial savings in steam and power.

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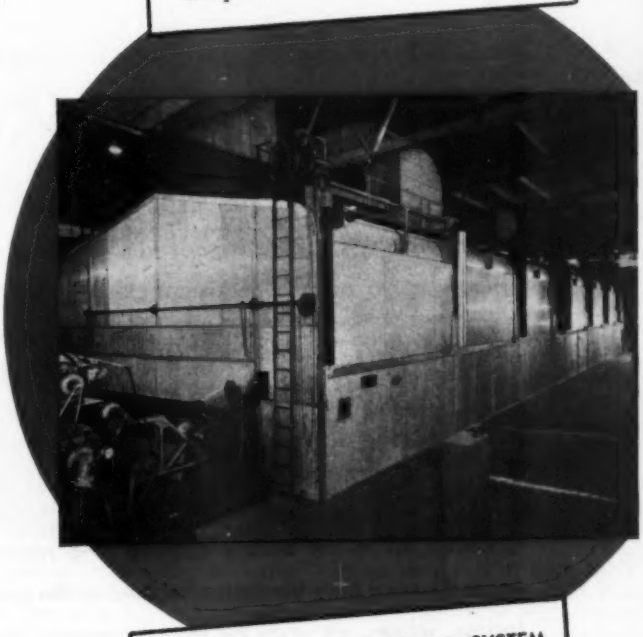
It eliminates the objectionable features of other methods. A well built unit with vital parts easily accessible. Equipped with counterflow principle, arranged for individual control of tension on each pass.



NEW TYPE GREWIN NOZZLES

With the experimental stage passed, this new improved Ross-Grewin Nozzle is now available to the paper industry. This nozzle is proving particularly effective on wide paper machines.

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Now it is possible to pneumatically convey as a ribbon the trim from winders and rewinders for heavier basic weights. Vertical injectors can be used where space limitations bar horizontal installation.

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PENFORD GUMS

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Coatings up to the usually applied 6–8 pounds per ream are water-resistant, and coated board may be water finished at the calender stacks. For special uses, resins, latices, waxes, etc. may be incorporated as necessary.

The exceptionally high adhesive value and non-migrating nature of PENFORD GUMS allow one to meet the highest pick tests necessary.

We would be happy to work with your technical department on this new use of the Penford Gums as well as on their previously established applications in straight starch surface sizings, internal sizing, and general adhesive applications.

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Small details can make a big difference in trimming a tree . . . and in manufacturing valves. For example, *every* Powell Valve part must pass *rigid inspection*. Then, as a final, finishing touch, each Powell Valve is subjected to *actual line tests*.

It's these seemingly small details that have helped Powell Valves maintain their record of dependability since 1846. Powell has probably done more valve research, solved more valve problems, and makes more types of valves than any other organization in the world.

With Powell Valves on the job in your plant, you'll say every day's a holiday from flow control worries. Following are just a few of the valves that have the gift of dependable service you want—and need. They're available through distributors in principal cities. If a distributor is not located near you, just write us. We'll be pleased to tell you more about these valves—and our complete line.

STAINLESS STEEL O.S. & Y. "Y" VALVE *(Fig. 1944)* for 150 pounds W.P. at 500 F. The stem is threaded, guided and rises through a bronze bushing in the upper yoke. Made with flanged ends only, with flange dimensions conforming to MSS SP-42. Sizes 2½" to 12", inclusive.

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ALUMINUM O.S. & Y. GATE VALVE *(Fig. 2442)* for 100 pounds W.P. at 350 F. Type 304 or 18-8 Stainless Steel stem and interchangeable solid or double wedges. Sizes ¼" to 2", inclusive.

P V

Despite cleanliness and efficiency of a midwest firm's Plastic Division, shown above, there was "dirty work" afoot in the hydraulic systems of the injection molding machines. Division superintendent (left) and A. L. Seabaugh, of Standard Oil, came up with a solution.

Stops "dirty work" in hydraulic units

● A midwest company became increasingly aware that hydraulic oil performance in its fourteen injection molding machines was not all that it should be. Formation of oil deposits not only made frequent cleaning of filters necessary but posed a threat to efficient operation of the hydraulic units.

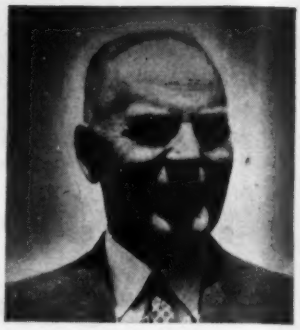
A Standard Oil lubrication specialist recommended STANOIL Industrial Oil, a top quality product of exceptionally high stability and containing necessary additives to prevent corrosion and oxidation troubles.

Throughout six years of continuous hard use, STANOIL has provided clean operation. It has not been necessary to replace any of the original fills of STANOIL, and only a small amount of make-up oil has been needed. Where filters previously had to be cleaned at least four times a year, they are now cleaned once each year. Hydraulic operation has been efficient and reliable.

STANOIL
TRADE MARK
Industrial Oil

You can rely on STANOIL to give you the same clean, dependable service not only in hydraulic units but in a wide variety of equipment. You can get the help of the Standard Oil lubrication specialist serving your section of the Midwest by phoning your local Standard Oil office. Or, write: Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Illinois.

What's YOUR problem?



A. L. Seabaugh, working out of Standard's Chicago office, is the lubrication specialist who helped this midwest firm gain both operating and maintenance benefits through use of STANOIL in hydraulic units.

Located throughout the Midwest is a corps of specially trained, experienced Standard Oil lubrication specialists, ready to give you prompt, on-the-spot help with lubrication in your plant. Their broad background of practical experience, plus their thorough training in Standard Oil Lubrication Engineering Schools, is yours for the asking. Simply phone your nearest Standard Oil Company office. The lubrication specialist will call without delay. He has a complete line of petroleum products to offer, including such outstanding lubricants as:

SUPERLA Greases — Available in a wide range of consistency grades and in both lime-soap and soda-soap types, SUPERLA Greases cover a wide range of operations. These efficient products are comparable in quality with the highest type of special greases.

STANOLITH Greases — Because these unique lithium soap products possess the heat resistant properties of soda-soap greases and the water resistant properties of lime-soap greases, they offer a solution to lubrication problems caused by the presence of both heat and water.

STANDARD OIL COMPANY

STANDARD (Indiana)

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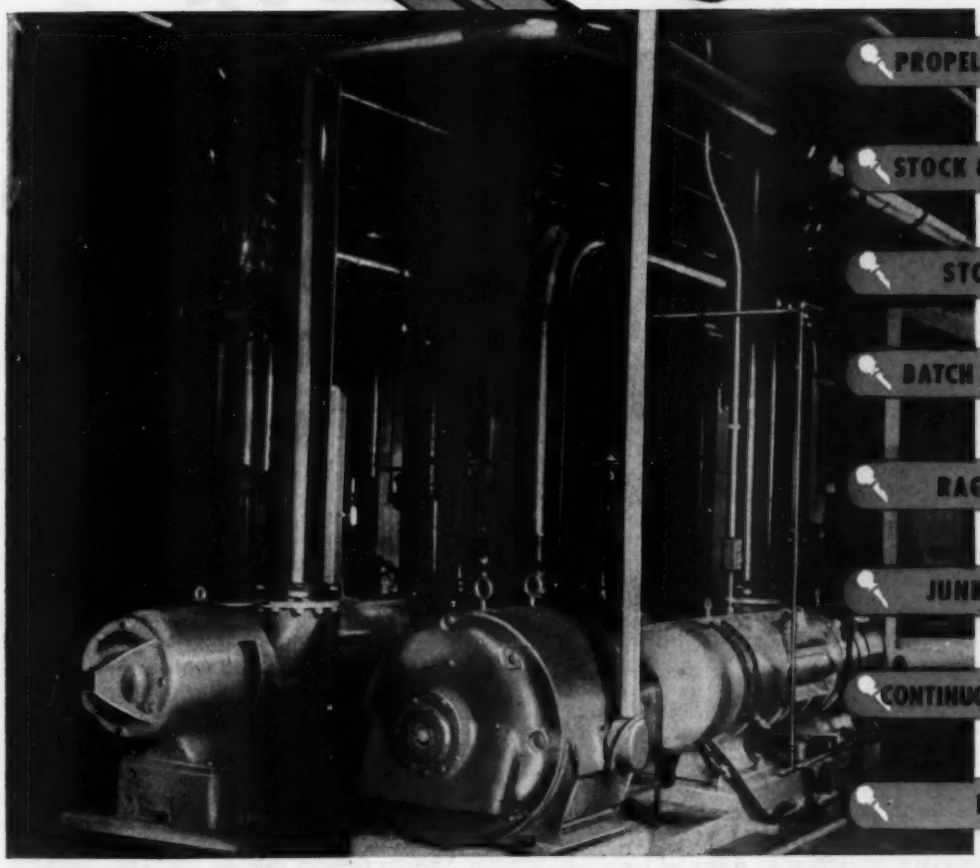

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- BATCH FIBREPULPERS
- RAG CATCHERS
- JUNK REMOVERS
- CONTINUOUS FIBREPULPERS
- BEATERS

Two Downingtown FIBREFINERS used in the preparation of stock in a mill producing gypsum liner grades and box boards.

The Dictionary Says . . . *"to integrate" means "to bring parts together to make a whole."*

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PROTECT YOUR TANKS AND OTHER STORAGE EQUIPMENT AGAINST THE ESCAPE OF VAPORS

One of the world's largest rubber lined tanks in the process of being sandblasted, insulated and rustproofed with a one- quarter inch coating of PALLADIUM MASTIC TYPE 3X.

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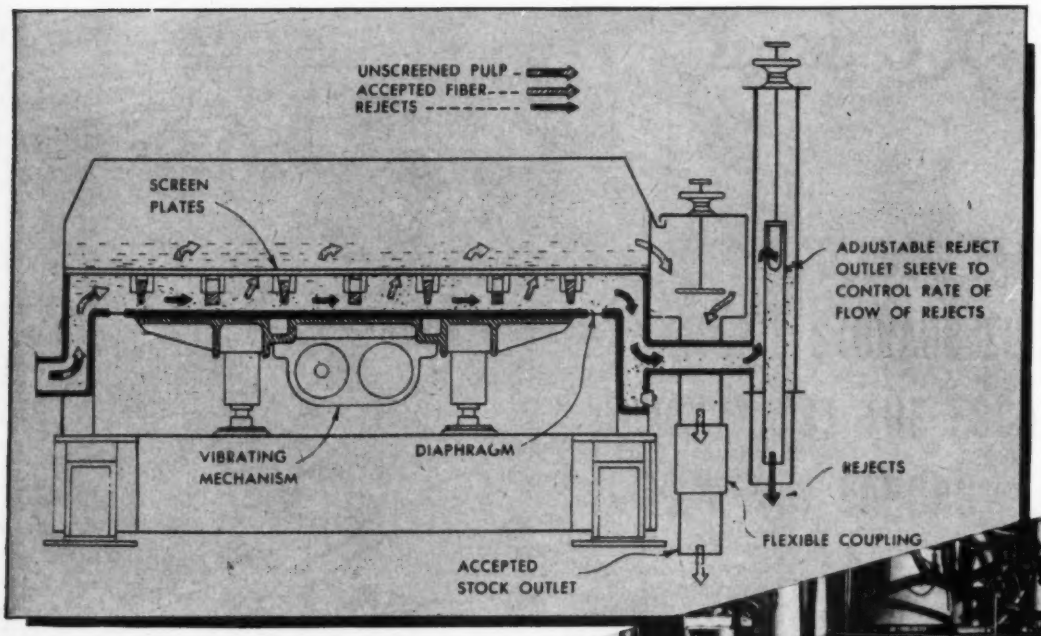
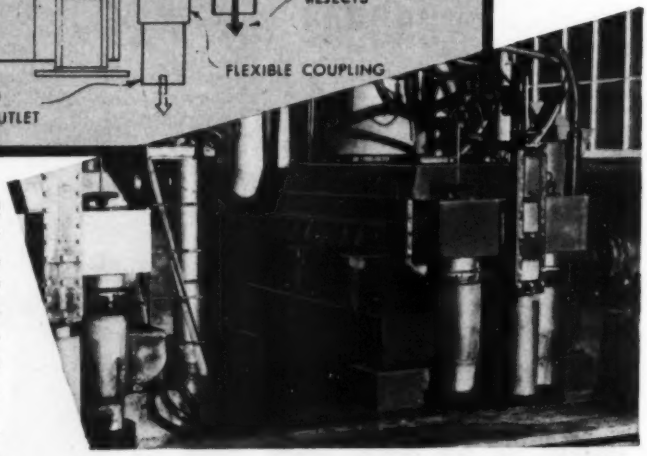
OLIVER-AHLFORS UPFLOW Pulp Screen

Shives, Dirt and Other Rejects Are Licked Before They Get Started





Study this diagramatic sketch. Note how unwanted solids in the pulp—many being denser and heavier—fall away from the wanted fibers in the pre-screening compartment. They're licked before they ever get started. Most don't even reach the screening surface. Certainly they don't tend to force their way through the slotted-openings along with good fibers as they do with down flow screens.

This is the distinctive advantage of the Oliver-Ahlfors Pulp Screen! Other advantages include:

1. **Entire screen surface constantly operating at full capacity;**
2. **Requires approximately one half of floor space compared to conventional flat screens;**
3. **Continuous automatic screen plate cleaning, minimizes operator attention;**
4. **Screens at high density reducing required decker capacity.**

As for its application: The Oliver-Ahlfors Screen is recommended as a primary and secondary screen on all bleached or unbleached chemical pulp. Let us know when it will be convenient and we'll have one of our experienced pulp and paper engineers call to discuss your requirements and to tell you about the screens operating in this country as well as in many mills in Europe.

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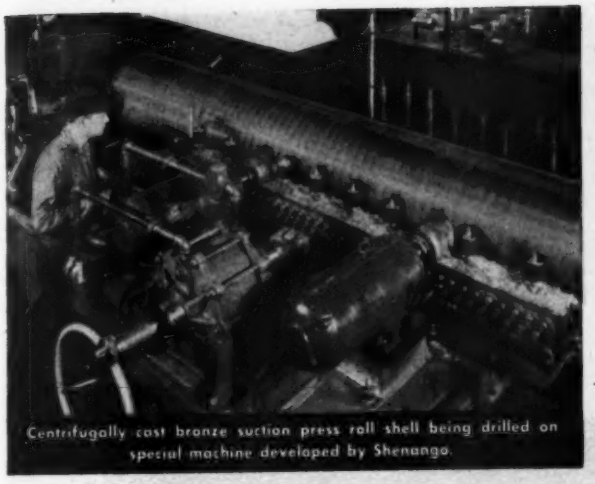
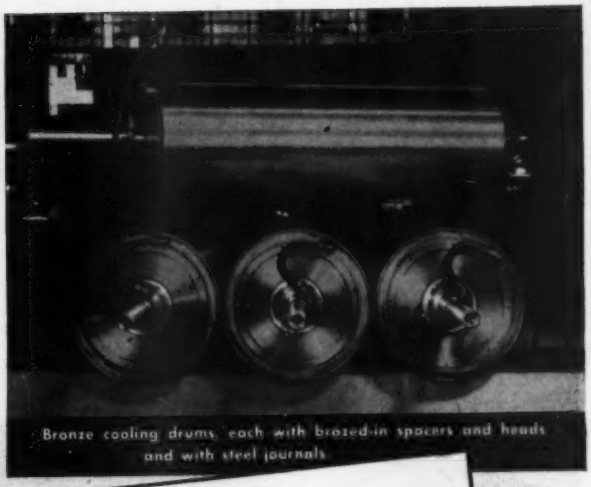


Centrifugally cast bronze suction press roll shell being drilled on special machine developed by Shenango.



Bronze cooling drums, each with brazed-in spacers and heads and with steel journals

Shenango Qualities mean longer roll life

SHENANGO-made rolls, simple or complex, large or small, have one important thing in common. They are cast by the Shenango highly advanced centrifugal process. This means stronger, pressure-dense metal with finer grain... better able to withstand friction as well as pressure and heat stresses.

This, together with Shenango's modern machining and finishing facilities, adds up to superior, money-saving performance for rolls, roll cores, drums and assemblies made precisely to your specifications.

It will pay you to specify Shenango. For further information or data on meeting your specific needs, write to: Shenango-Penn Mold Company, Centrifugal Castings Division, Dover, Ohio (Executive Offices: Pittsburgh, Pa.).

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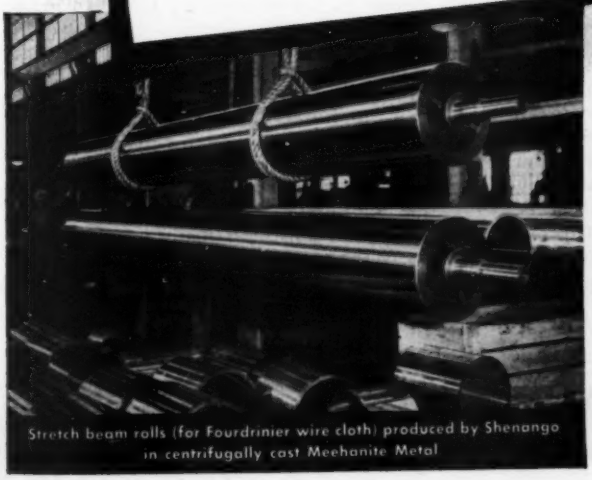
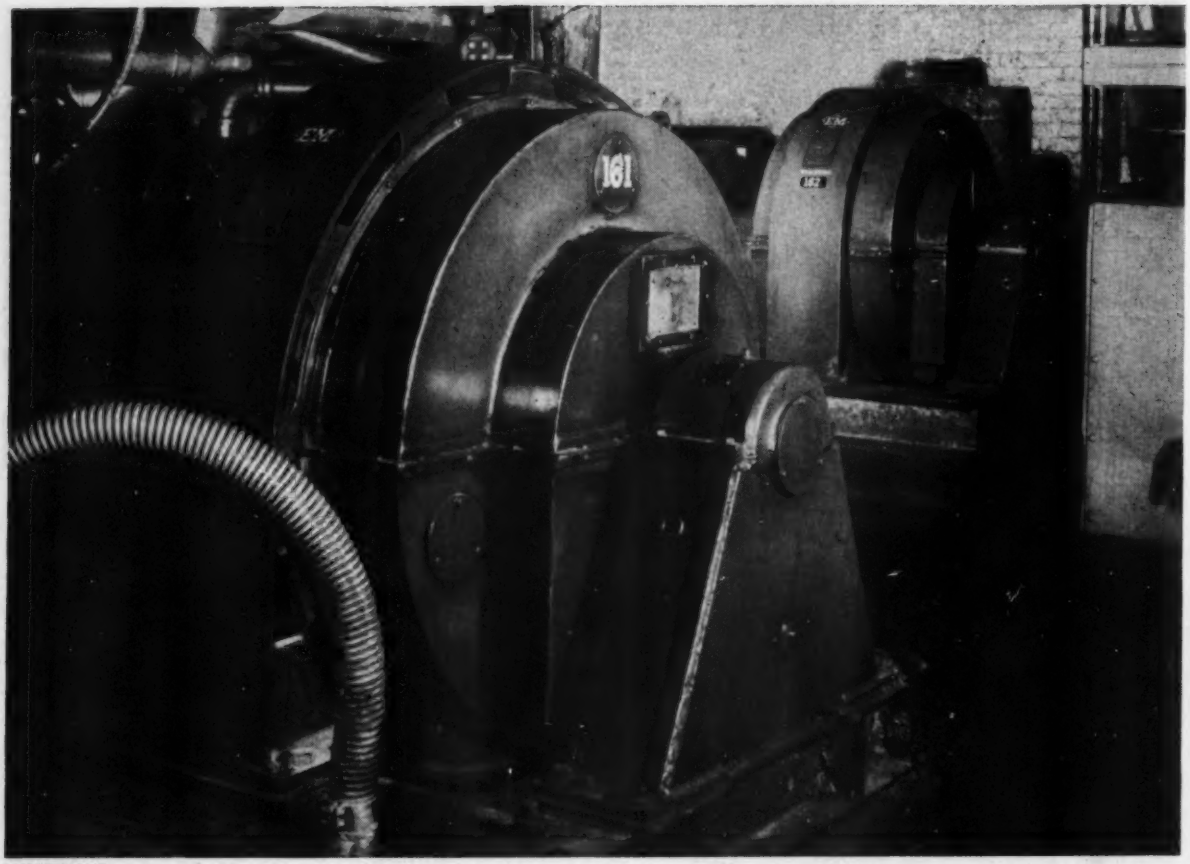
ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL



Stretch beam rolls (for Fourdrinier wire cloth) produced by Shenango in centrifugally cast Meehanite Metal

Bronze breast roll with steel inserts, centrifugally cast, finished and assembled in the modern Shenango shops



1200-TPA-2143

"Never have any trouble with 'em..."

This is J. J. Bechard of Flintkote, inspecting the control for one of his E-M Synchronous Motors. The E-M Polarized Field Frequency Relay is utilized for smooth, powerful synchronizing.

. . . so says J. J. Bechard, engineer at the Pioneer Division of the Flintkote Company in Los Angeles, California.

He's talking about the E-M Synchronous Motors in his care. Shown above are two 200 hp, 428 rpm E-M Synchronous Motors driving Jordans at Flintkote.

Among the reasons why E-M Synchronous Motors earn such praise is the special engineering and manufacturing care given to components such as coils and bearings. For example, coils have the finest insulating materials available and are treated for maximum moisture protection. Heavy coil-end lashing prevents distortion on full-voltage starting. You can expect this same extra value construction, feature by feature, in every E-M Synchronous Motor you buy.

All in all, these Motors offer many important advantages to your mill drive system . . . *high efficiency*, which saves on power costs . . . *power factor correction*, through ability to supply leading reactive kva . . . adaptability for *direct connection* . . . and others.

E-M also provides a full-line of special enclosures for maximum protection and continuous operation under difficult conditions. To see what selection of features will prove best for your mill drive, see your nearest E-M sales engineer. And you'll be interested in *E-M Synchronizer* No. 26, the pulp and paper mill number, which illustrates many important applications of synchronous motors. Write for your free copy.

ELECTRIC MACHINERY MFG. COMPANY

MINNEAPOLIS 13, MINNESOTA

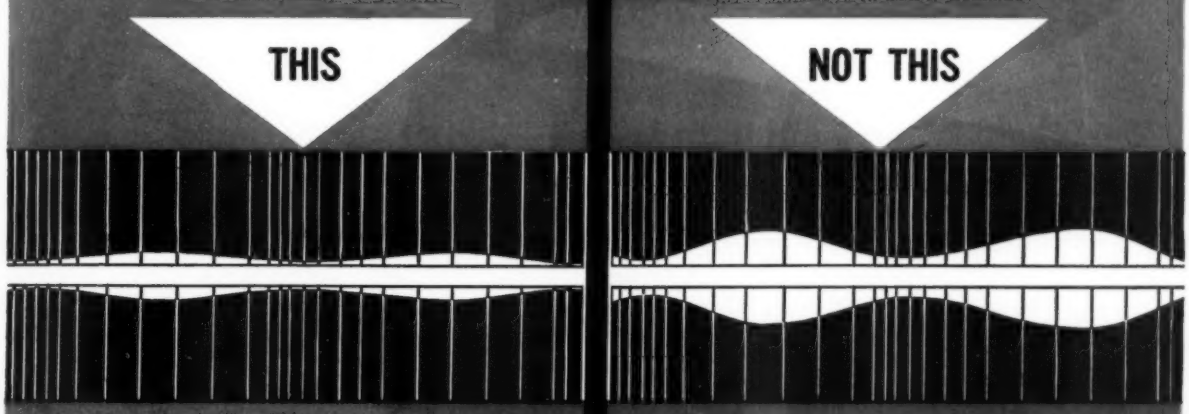
Specialists in making motors do

EXACTLY WHAT YOU WANT THEM TO

for

UNIFORM PENETRATION

of adhesive in corrugated paperboard



Controlled Penetration with KELSIZE

Here — you can see how penetration of adhesive is controlled, regardless of variation in paperboard porosity, through the use of a fraction of a per cent of Kelsize added to the adhesive.

Uncontrolled Penetration

Note that where penetration of adhesive is uncontrolled, the variation of penetration is in proportion to the variation in porosity of the paperboard.

use

KELSIZE

KELSIZE gives you these advantages:

Less adhesive used . . . less moisture to remove
Adhesive where you want it . . . where it's needed
Reduced warping . . . stiffer board
Higher machine speeds

Our Technical Service Department will gladly give you more detailed information. Write or call our nearest office.

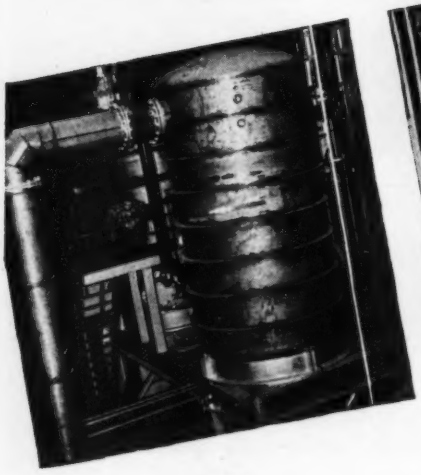
KELSIZE® *a product of* **KELCO** *company*

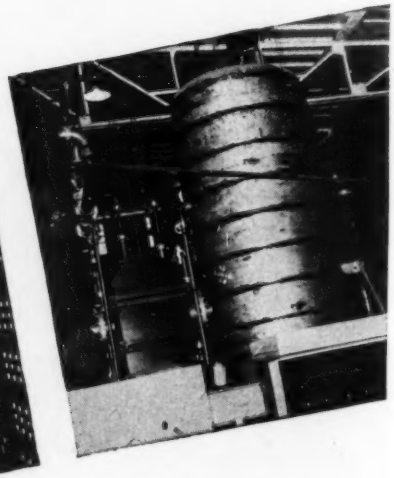
20 N. Wacker Drive, Chicago 6, Illinois
31 Nassau Street, New York 5, N. Y.
530 W. Sixth Street, Los Angeles 14, Calif.
Cable Address: Kelcosales — New York

Operating installations in the U. S. A. prove value of General American Conkey Evaporators with Rosenblad Switching System*

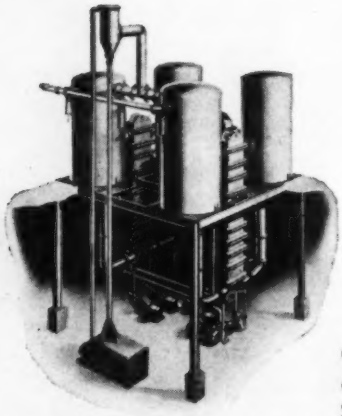
Full details available

Find out how a Conkey Evaporator with Rosenblad Switching System can avoid "down time" and eliminate scale removal costs for you.





- **stream pollution nuisance eliminated**
- **continuous capacity operation**
- **reduced fuel costs with liquor burning**
- **by-product return from concentrated liquor**



Conkey 4-Body Triple effect Flat Plate Heating Surface Evaporator

PROCESS EQUIPMENT DIVISION GENERAL AMERICAN TRADE MARK

PROCESS EQUIPMENT DIVISION
GENERAL AMERICAN TRANSPORTATION CORPORATION

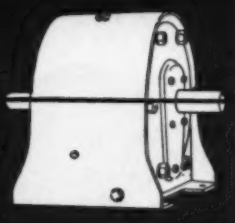
Sales Office: 380 Madison Avenue, New York 17, New York
General Offices: 135 South La Salle Street, Chicago 90, Illinois
OFFICES IN ALL PRINCIPAL CITIES

Other General American Equipment: Turbo-Mixers • Filters • Dewaterers
Towers • Tanks • Louisville Dryers • Pressure Vessels

Sole licensee in the U. S. A. for the A. B. Rosenblads Patenter Evaporator Switching System

*PATENTS APPLIED FOR

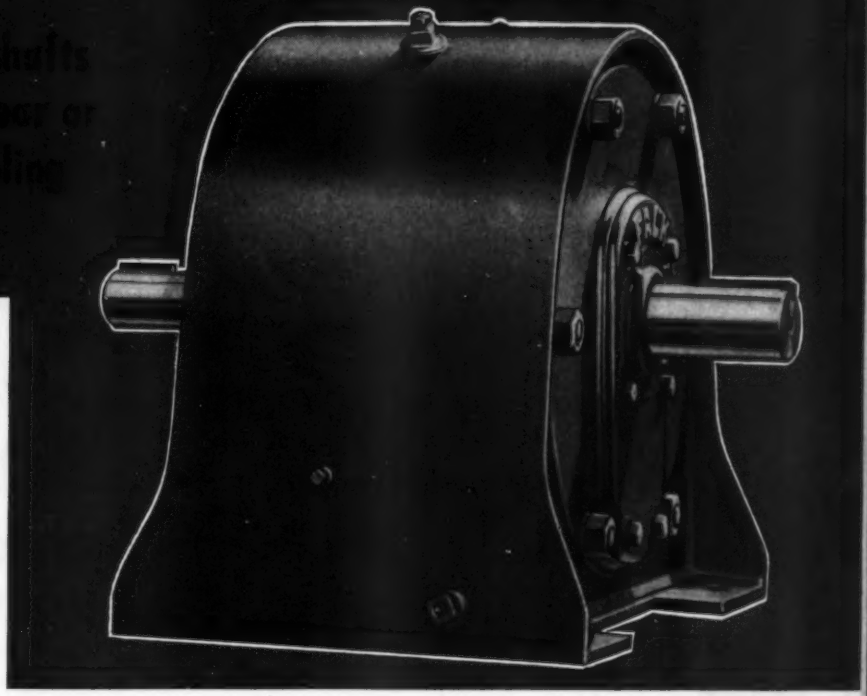
The versatile, STRAIGHT LINE

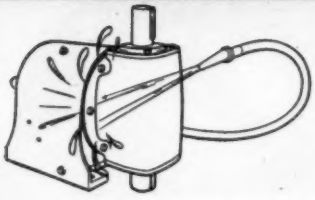


ALL-STEEL **FALK SPEED REDUCER**

(Concentric Type)

High and low speed shafts suitable for V-belt, gear or chain as well as coupling connections





The Type "C" Speed Reducer has these "In-built" Factors:

Sealed Housings. Dual closures and one-way vents keep oil in, dust and moisture out. Units are splash-proof, leakproof, dust-proof.

Positive Lubrication. Large sump capacity . . . oil-tight construction assures clean lubricant . . . direct dip of revolving elements provides positive lubrication at all speeds.

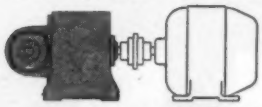
Precision Gearing. Heat treated alloy steel, precision cut and shaved helical gearing throughout . . . quiet-operating crown shaved pinions . . . taper bored gears for easy ratio changes.

Wide Speed Range. Selective ratio combinations provide output speeds from 1.5 rpm to 1430 rpm with stock gears.

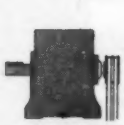
All-steel Housings. Unbreakable, strong, rigid. Generous overhung load capacities provided by wide bearing spans, large shafts and bearings.

Streamlined inside and outside. Smooth, clean surfaces; machine welded construction conforms to NEMA motor frames.

A FEW TYPICAL DRIVES FOR "C" AND "CB" UNITS



COUPLING TO "CB" UNIT



V-BELT TO "C" UNIT

CHAIN TO "CB" UNIT

The ideal type for Turbine, Engine or Special Motor

Here is an exceptionally versatile member of the famous FALK line of reduction units. The Type "C" Straight Line Speed Reducer is an all-steel concentric shaft unit rated in accordance with AGMA standards. It is structurally similar to the universally popular FALK Motoreducer, and offers many special application advantages.

It can be driven by motor, turbine or engine with direct coupling connection—or through a V-belt or chain drive. It lends itself effectively to hydraulic coupling, brake-wheel or overload protective coupling, multi-speed transmission, or to variable speed drives—without modification. Units can include self-contained backstop if desired. Ratio can be modified with easily installed stock gears. With modifications, unit can be used as a speed increaser.

These all-steel Straight Line Speed Reducers are *available for prompt delivery* in standard ratios in horizontal and vertical concentric models, also in horizontal and vertical right-angle models; in single, double, triple and quadruple reduction. For full details, write for Bulletin 1104.

FALK ...a good name in industry

THE FALK CORPORATION · 3001 W. Canal St.· Milwaukee 8, Wis.

A GOOD START TO A BETTER FINISH... *in any mill*

MIDVALE STAINLESS STEEL ROLLS

RESIST CORROSION... LAST LONGER... REQUIRE FEWER REGRINDS

Skill in machining . . . precision in finishing . . . careful inspection by Midvale craftsmen assure paper mill rolls with a higher lustre and longer life.

Every day the reliability of Midvale stainless steel rolls is being proved in America's leading paper mills. Midvale's skilled craftsmen, modern equipment and quality control—from furnace to finished roll—offer you rolls with unsurpassed performance built in them.

Whatever your needs in rolls—either stainless or alloy for fine paper, corrugated or other material—Midvale can make the rolls you need. Midvale produces all types of heavy equipment to meet the specifications of the paper industry—steel forgings, heat and corrosion resistant castings.

THE MIDVALE COMPANY
NICETOWN, PHILADELPHIA 40, PA.
OFFICES: NEW YORK • CHICAGO • PITTSBURGH
WASHINGTON • CLEVELAND • SAN FRANCISCO

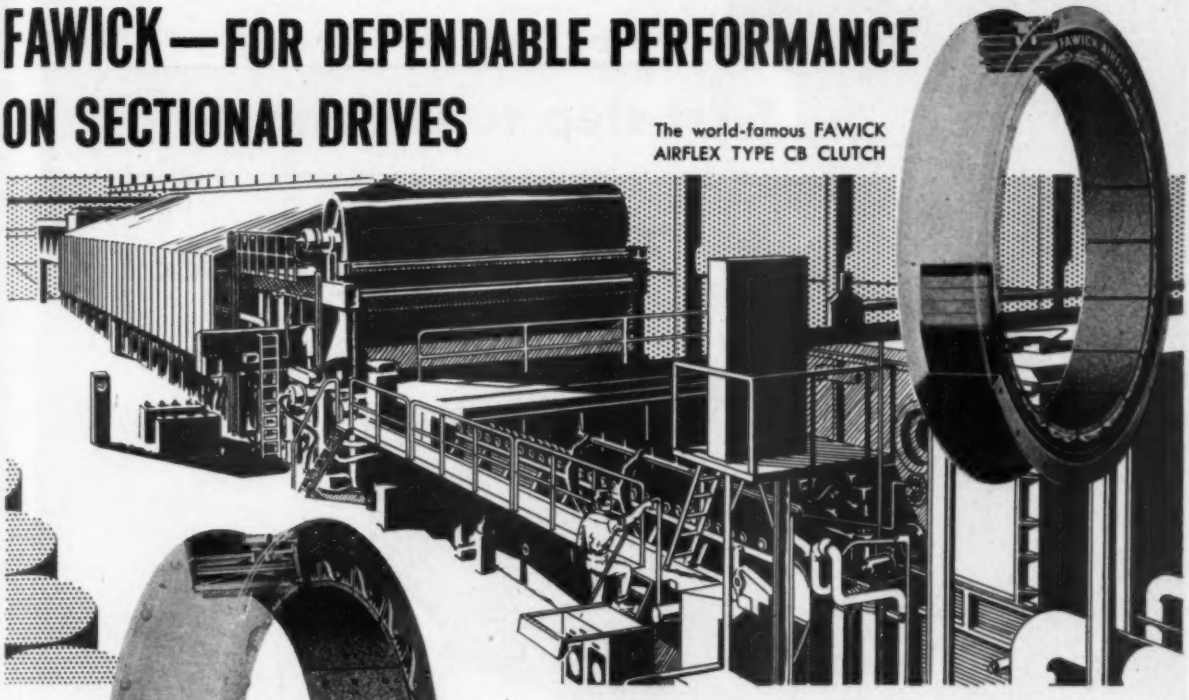
MIDVALE

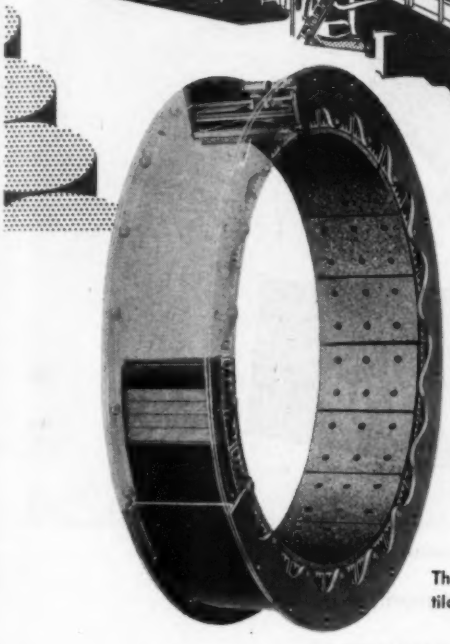
Custom Steel Makers to Industry

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

FAWICK—FOR DEPENDABLE PERFORMANCE ON SECTIONAL DRIVES

The world-famous FAWICK AIRFLEX TYPE CB CLUTCH





COOLER CLUTCH OPERATION
●
CUSHIONED DEPENDABLE ACTION
●
SELF-ADJUSTMENT FOR WEAR
●
LONG LIFE . . . LOW MAINTENANCE

The NEW advanced-design, completely ventilated FAWICK Type VC Air-Ring CLUTCH

USE FAWICK AIRFLEX CLUTCHES WHERE DEPENDABLE PERFORMANCE COUNTS! That's more than a slogan—it's good practical thinking for paper mill operators who know from experience that dependable performance of their machines and drives spells the difference between profitable or loss operation.

Simple, rugged and compact FAWICK CLUTCHES provide outstanding advantages for top-efficiency drive performance.

First, FAWICK CLUTCHES, because of their fast, smooth operation and their simple design and rugged construction, provide for more dependable machine productivity.

Second, the complete ventilation in FAWICK CLUTCHES provides cooler operation and minimum wear under the most severe conditions.

Third, FAWICK CLUTCHES provide unmatched maintenance economy—they require no lubrication and automatically adjust for wear, eliminating down time for this maintenance.

A FAWICK Engineer will be glad to show you all the advantages FAWICK AIRFLEX CLUTCHES will bring to your equipment.

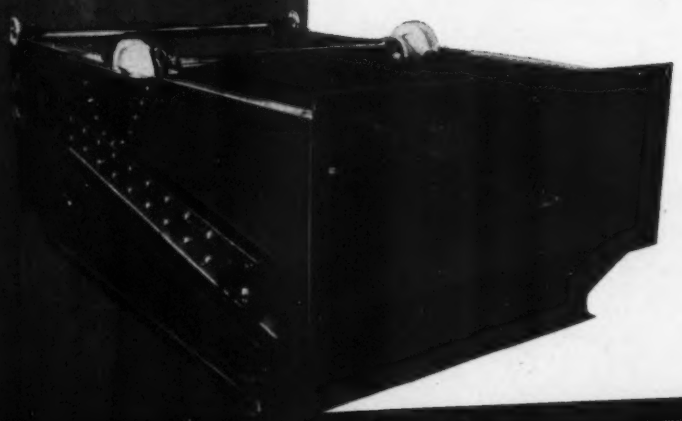
FAWICK AIRFLEX DIVISION
FEDERAL FAWICK CORPORATION
9919 CLINTON ROAD • CLEVELAND 11, OHIO

For further information on FAWICK *Industrial Clutch and Brake Units write to the Main Office, Cleveland, Ohio, for Bulletin 400-A and ML-102.*

FAWICK Airflex
INDUSTRIAL CLUTCHES AND BRAKES

First step to a clean pulp

THE REENER SCREEN



For Efficient, Economical Knotting

Vibratory screen—high capacity

Low power consumption

Small space requirements

Rubber mountings—low maintenance

A Cowan Brothers development

Laboratory model Screens available for experimental work.

Write for Bulletin.

NICHOLS

Engineering & Research Corp.

70 PINE ST., NEW YORK 5, N. Y.

40 S. Los Robles Ave., Pasadena 1, Calif.

THE MIDDLE ATLANTIC AREA—another in a series of scenes . . . regions where Appleton Wires serve the paper industry.

BACKTRACK from the Ohio river valley through the Middle Atlantic Area...cross rugged, mountainous Pennsylvania to New York and the Atlantic Coast, and you have traversed an area of typical, diversified America.

Here, blended in with an economically healthy panorama of agriculture, romantic river traffic and busy industrial centers is the paper industry. Yes, here are hundreds of mills...and, you can bet that practically every one using Fourdrinier wires already knows that *Appleton Wires are Good Wires!*

APPLETON WIRE WORKS, INC., APPLETON, WISCONSIN

Higher Yield... Drier Pulp... in More and More Mills with Kamyr Wet Machines

View of Dry End of Kamyr Wet Machine Installation at Consolidated Water Power & Paper Co., Appleton Division Mill

Consolidated's New Kamyr Wet Machine

Consolidated Water Power & Paper Co. has completed installation of a Kamyr wet machine at its Interlake (Appleton) Division pulp mill at an overall cost of $500,000.

The new two-press 156" feltless machine, built by the Sandy Hill Brass and Iron Works, is designed to produce 50 per cent oven-dry wet lap pulp. Company officials stated that this reduction in moisture content will cut shipping costs and that the machine will increase operating efficiency. All but a small amou[illegible] of pul[illegible] produced at thi[illegible] loca-

Economical and Efficient Pulp Sheeting are chief factors in the current upswing in Kamyr Wet Machine sales.

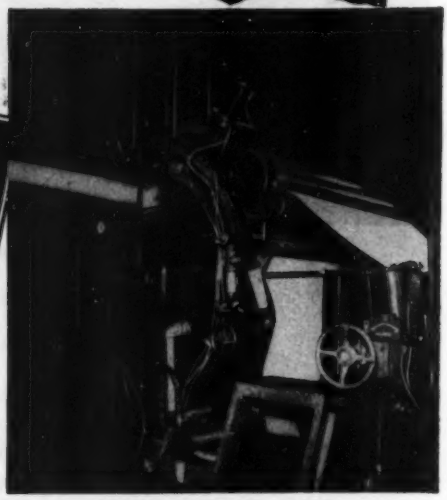
Lower Costs result from:

- Continuous Operation
- Larger Output
- Low Upkeep and Operating Costs
- No Felts
- Long Cylinder Mould Wire Life
- Lower Freight for Drier Pulp

More Efficient Sheeting due to:

- Uniform Consistency
- Greater Dryness
- Cutter Designed for Wet Sheeting
- Sheets of Suitable Size
- Easier Sheet Handling

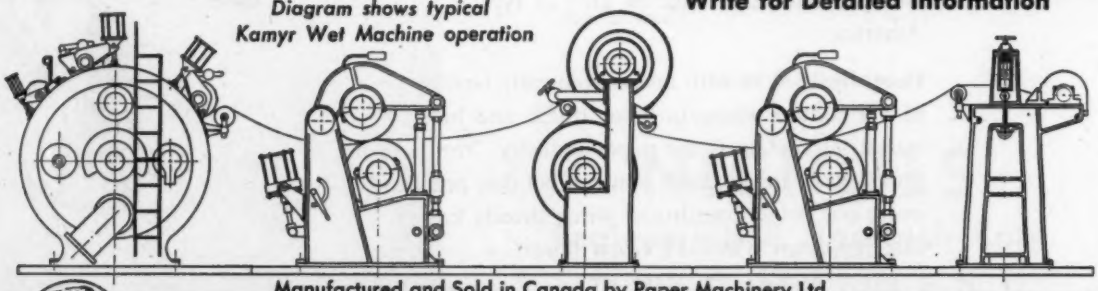
ONE Kamyr Wet Machine regularly replaces 8 to 10 Wet Lap Machines



The Mould Section on one of two recently installed Kamyr Wet Machines in mills of International Paper Co.

Write for Detailed Information

Diagram shows typical Kamyr Wet Machine operation



Manufactured and Sold in Canada by Paper Machinery Ltd.

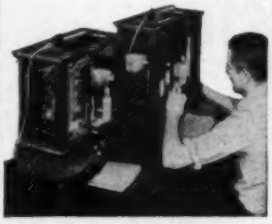
The Sandy Hill Iron & Brass Works

Hudson Falls, N.Y.

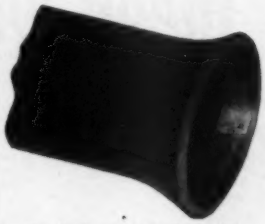
Why guess about evaporator tubes?

The Timken Company shows you what you get

Specifications for 3½% and 5% nickel tubes are available to you with no obligation.



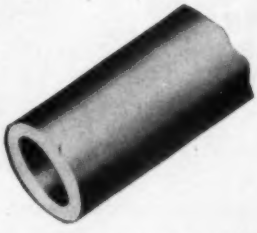
Certified chemical analysis of your shipments are available at your request.



In flaring test, tube I. D. must expand 20% without cracking or showing flaws.

Tubes must have Rockwell hardness number not exceeding B89.

Each tube is tested under hydrostatic pressure of 1,000 p.s.i. before shipping.



Tubes must be free of physical defects and have workmanlike finish. Inspection is rigid.

Tolerances in O. D., wall thickness and cut length are held to a minimum.

Purchaser has free entry to our plant for inspection of work on contract.

. . . and guarantees you'll get it!

WHEN you buy black liquor evaporator tubes from the Timken Company, you don't have to guess at quality. Timken® 3½% and 5% nickel steel tube specifications let you see exactly what you get. Every essential item is carefully covered—chemical composition, physical properties, inspection methods, plus the strict tests every shipment must pass. (See above).

There's no guesswork on our part, either. The Timken Company guarantees that every order meets these exacting specifications. Quality is controlled at every step. Tubes are tested and inspected before shipment. The result for you is reduced tube replacement costs, less tube sheet wear, less downtime for your plant.

For your copy of 3½% and 5% nickel Timken steel tube specifications, write on your company letterhead to The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

Haste need not mean waste!

When paper was made by hand—in small deckles, the way the Chinese made it—papermaking was a slow process. To shake the deckle fast enough resulted in waste of furnish that slopped over and fell onto the floor.

With modern machines, haste does not mean waste, if the machine is equipped with the proper Hamilton felts.

All Hamilton Felts—there are 300 different styles—are woven with plenty of open spaces between threads. The water flows through them almost as rapidly as it can be supplied, under pressure, from gravity headboxes or by suction headboxes.

But the fibers cannot get through. They are caught by the long threads of the nap and removed by the metal shoes that scrape the surface of the felts or washed off by jets of clean water. Then the recovered fibers are returned to the wet end to be used over again.

When your machine is equipped with the correct Hamilton Felts haste will not mean waste. The Hamilton Selling engineer who calls on you will tell you why.

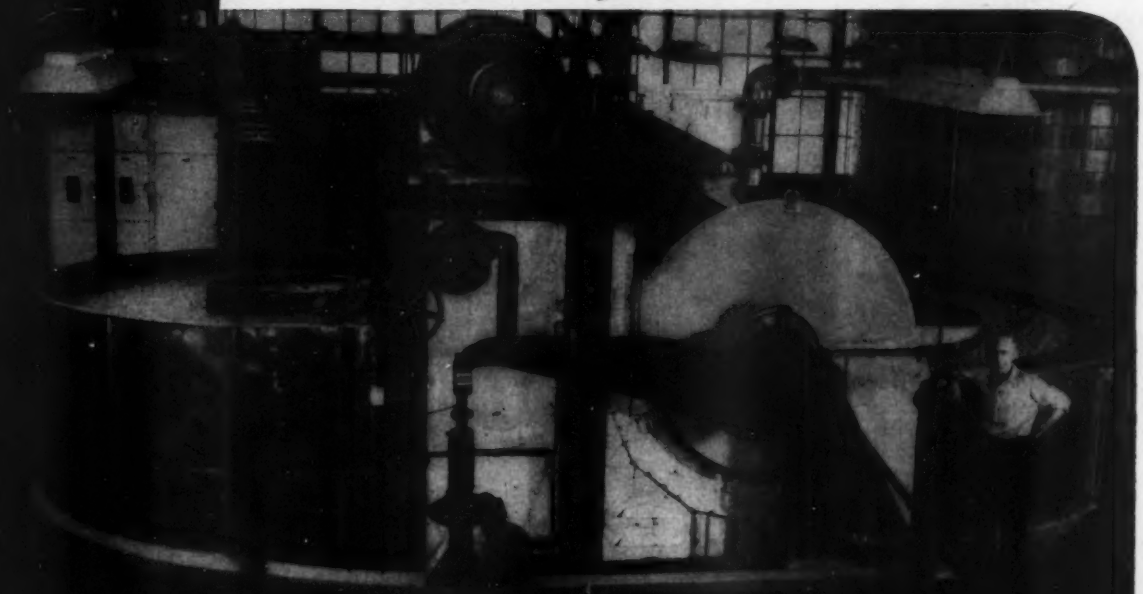
Hamilton Felts

MIAMI WOOLEN MILLS

Established 1858

SHULER & BENNINGHOFEN, HAMILTON, OHIO

ANOTHER E.D Jones INSTALLATION



Improved paper formation; 50% saving in horsepower

Results count! And the results on this *Jones Beating Unit*, installed last year at the Taylor Fibre Company, Norristown, Pa., are reported by their Paper Mill Superintendent, C. L. Horst.

"We are able to beat off stock of all grades in the new unit in one half the time it takes to achieve the same results in the old beater . . . a saving in horsepower of 50% per ton of stock.

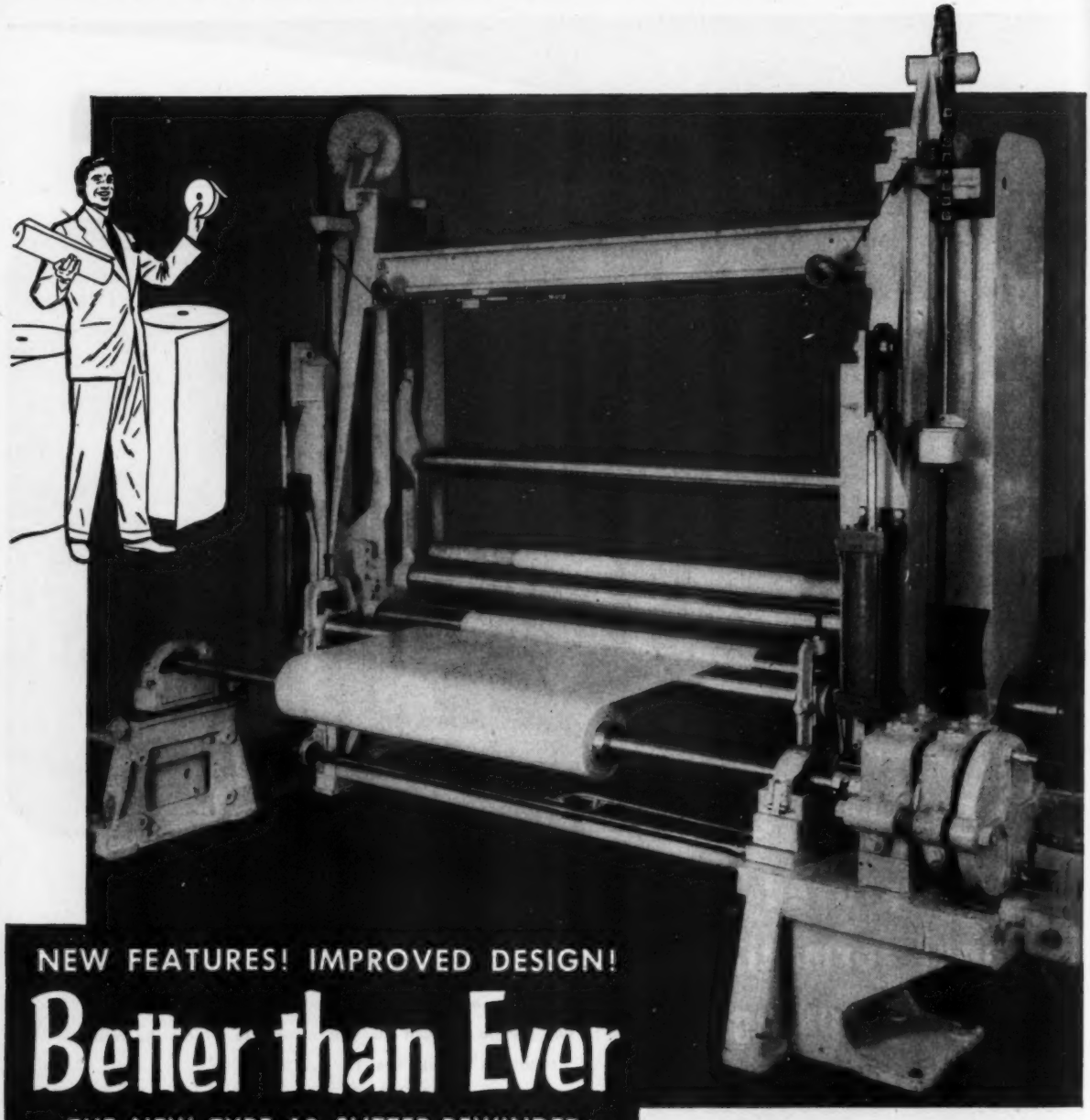
"As to the cutting action, the actual fibre length is much more uniform, which has had the effect of improved paper formation".

Remarkably simple to install — because it is delivered completely *pre-assembled* — the Jones Beating Unit is available for either tub or Multi-Beater applications. For details, ask your Jones representative, or write us direct.

E.D Jones

E. D. JONES & SONS COMPANY
PITTSFIELD, MASS.

REPARATION MACHINERY



NEW FEATURES! IMPROVED DESIGN!

Better than Ever

THE NEW TYPE 10 SLITTER-REWINDER

Over the years the Camachine Type 10 slitting and roll winding machine has built a solid reputation for dependability in versatile heavy-duty service for converting plants and paper mill finishing rooms. Now, with several new design features, the Type 10 is smoother-running, quiet and vibrationless even at high speeds. That means top quality rolls at low cost. Write for Camachine Bulletin 2040 for detailed information. The new Camachine Type 10 is now available in both score-cut and shear-cut models to meet your requirements.

Write today for Bulletin 2040

CAMERON MACHINE COMPANY • 61 POPLAR STREET • BROOKLYN 1, N. Y.

SEE THE NEW Camachine® Type 10

AA-284

take a closer look at

Light-Weight STAINLESS PIPING

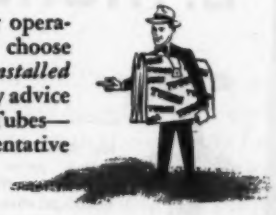
Schedule 5 and Schedule 10

The *initial*-cost economy of Schedule 5 and Schedule 10 stainless pipe is always attractive but only pays dividends to the careful buyer. He is willing to remember that light-weight pipe frequently requires added supports or hangers and always requires special fittings. He also remembers that alignment problems may require a longer installation time. Therefore, he balances the attractive *initial* cost against *installed* cost.

The buyer also thinks of the adaptability of new piping to existing lines and possible future requirements such as increased operating pressures.

B&W manufactures all the standard pipe size schedules in a complete range of stainless steel grades. Thus, a buyer can obtain stainless pipe to meet any and every individual requirement.

It will pay you to analyze your operating requirements carefully and choose your stainless pipe on the basis of *installed cost* rather than *initial cost*. For any advice on stainless pipe or tubing, Mr. Tubes—your impartial B&W Tube Representative—is always on call.



THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

B&W SEAMLESS and WELDED TUBES

TA-1761 (G)

R-S valveEvents

• EXCERPTS FROM THE R-S BOOK OF EXPERIENCE •

Simplified Control and Shut-off of Volume and Pressure

The underground application shows a 50-pound R-S Valve with gear reducer, lubricating lines and operating nut which is hand operated with a wrench. Only a few turns of the wrench are required to open or close the valve.

Practically every R-S Valve installation, particularly when automatically controlled, provides useful experience that can be applied in other industries although they may be far apart in classification. It is this accumulation of engineering experience coupled with unexcelled production facilities that can be so helpful to you.

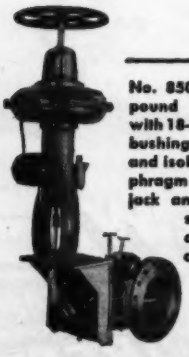
Call the R-S representative at the inception of your application. Benefit by his research and engineering experience in the simplified control and shut-off of volume and pressure.

S. MORGAN SMITH Company • YORK, PA.

MANUFACTURERS OF

HYDRAULIC TURBINES-VALVES

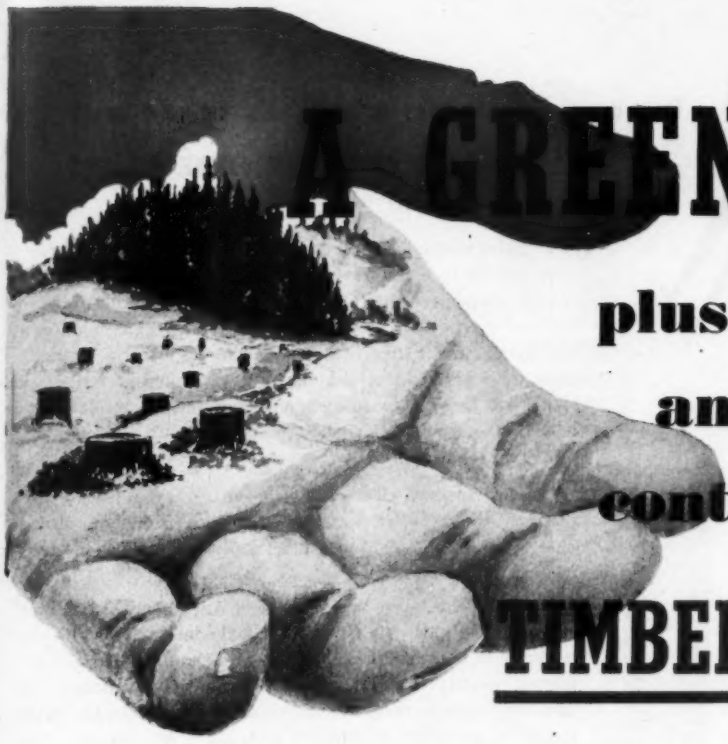
REPRESENTATIVES IN PRINCIPAL CITIES



No. 850—Ten-inch, 300-pound valve equipped with 18-8 shafts, hastelloy bushings, stick lubricators and isolating valves, diaphragm top with hand-jack and positioner. Installed for the flow control of sour crude petroleum.

No. 801—Three-inch, 125-pound bronze screwed end valve with handlever control and locking device. There is a size and type of R-S Valve for any industry or process.

Catalog No. 20 describes R-S Valves in detail—types, prime movers, applications and specifications. Contains more than 150 illustrations. Write for your copy.



A GREEN THUMB

plus fire, insect and disease control assures

TIMBER as a CROP!

In the Weyerhaeuser long range timber growth plan, blocks of "parent seed trees" provide seeds for new growth trees which will supply a steadily increasing part of the harvest. As these second growth trees replace virgin timber, the science of tree growing will have to solve many new problems of forest management.

Looking to the future, Weyerhaeuser Timber requirements will be obtained from trees between 80 and 160 years old. To successfully accomplish this transition, Weyerhaeuser Forestry Research is constantly gathering more specific knowledge of tree growing habits and their relationship to fire, insects, disease and logging practices.

The soundness of the Weyerhaeuser sustained yield programs depends on the ability of its foresters to predict with reasonable accuracy the yield of these young forests. Based on these future growth figures, the productive capacity of the Pulp Division can be planned years ahead. As the quantity of the crops from these young forests increases, so will the quantity of Weyerhaeuser Sulphite and Sulphate pulps.

No birds' eyes in your rag bond when it's made with ARMOUR CHROME HIDE GLUE!

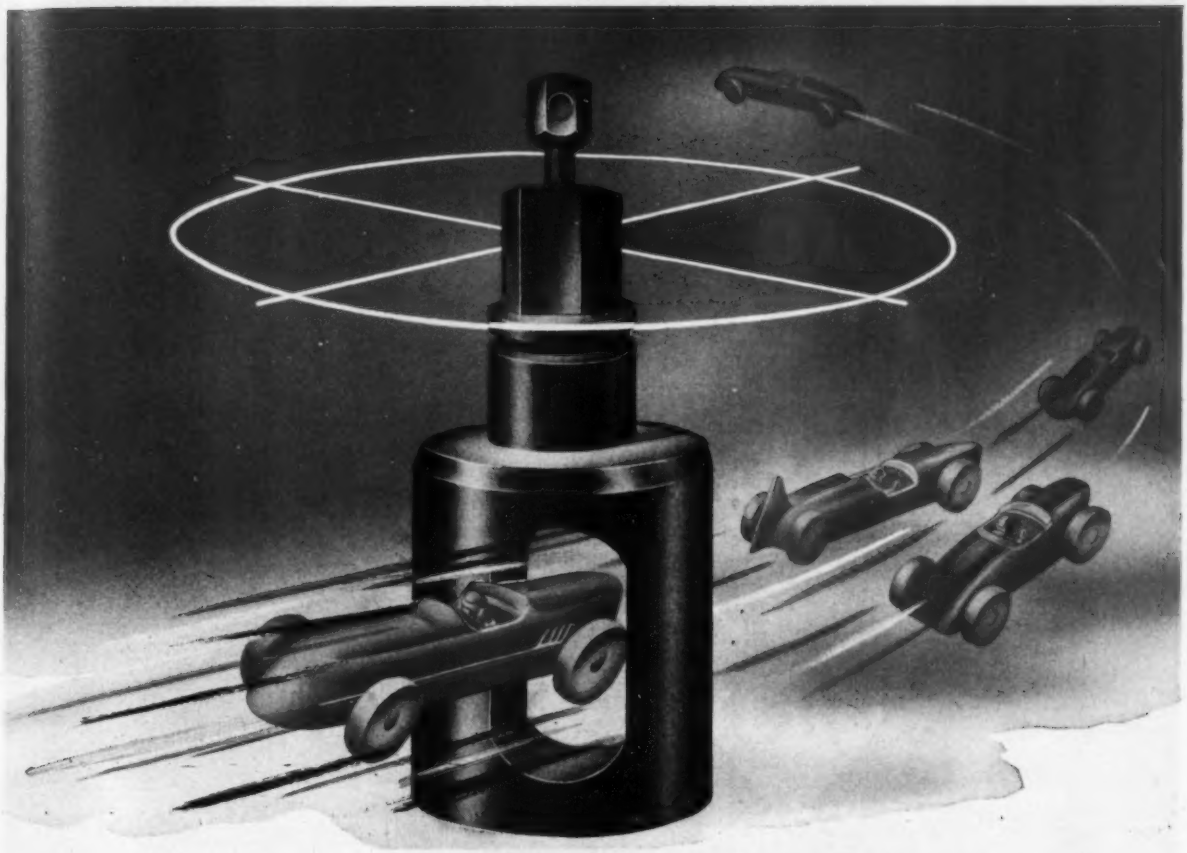
New drying methods insure that Armour's new "gelatine" type clear chrome hide glue is free from foreign materials. This improved product contains no free grease to cause "birds' eyes" in rag bond sized with it. Armour clear chrome hide glue produces a strong, colorless protective film that improves firmness, strength, rattle, resistance to tear, erasing and folding, and prevention of feathering. Due to the fineness and uniformity of particle size, it is readily soluble. It is slightly alkaline, with a pH range of from 7.2 to 7.8.

Armour standard clear hide glue—for the same field—has a pH range of 6.8 to 7.0. Surface sizing with this fine glue makes blue print, map, chart and similar papers compatible to treatment with tanning agents.

In other fields, there are exceptional Armour adhesives, such as our special hide glue for use as a colloidal flocculant for the retention of fiber and filler. We have other glues for "on machine" creping directly from the Yankee Dryer that contribute the tacking properties necessary for softness in paper tissues. Write today for complete information and prices on Armour glues for paper making.

ARMOUR *Adhesive Division*

Armour and Company • 1355 West 31st Street • Chicago 9, Illinois
Delaware and Spring Garden Streets, Philadelphia 23, Pennsylvania
50 Farnsworth Street, Boston 10, Massachusetts
120 Broadway, New York 5, New York



SPLIT-SECOND RESPONSE

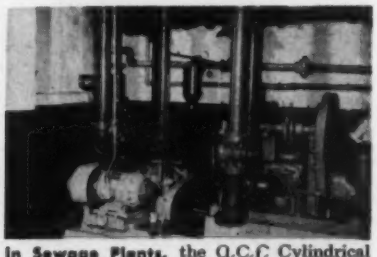
In *valve operation, too,* fast action can often be of critical importance. A.C.F.'s CYLINDRICAL Plug has a quick quarter-turn shut-off for safe control . . . full pipe area for capacity flow . . . a non-wedging effect for trouble-free performance.

Because of this outstanding combination of features, A.C.F. CYLINDRICAL Lubricated Plug Valves are safely and efficiently handling gasoline, oil, air, gas, vacuum, acids, caustic solutions, chemicals and many other fluids.

Sealed-in lubricants cut maintenance, help insure top service at minimum cost. Specify A.C.F. Valves and be *sure.*

In the Petroleum Industry the full pipe area of the Cylindrical Plug provides capacity flow.

On Natural Gas in Steel Plants, quick shut-off and 'turn on' provides positive and immediate control of flow.

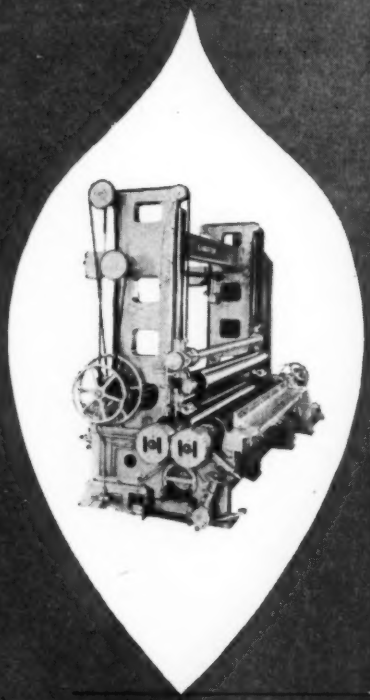


In Sewage Plants, the A.C.F. Cylindrical Plug shears obstructions, keeps sludge lines open.

a.C.f. CYLINDRICAL FULL PIPE AREA **PLUG VALVES**

Write for Catalog 4-PI, American Car and Foundry Company, Valve Division, 1501 E. Ferry Ave., Detroit 11, Michigan.

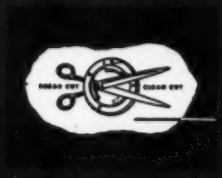
Representatives in 50 Principal Cities

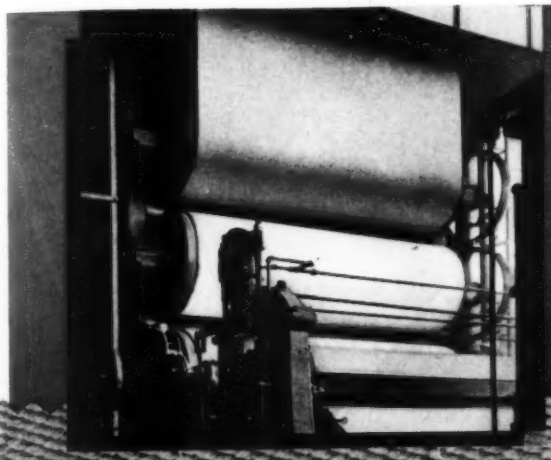


Langston
Slitters and Winders

Heavy cast iron bedplate and box section side frames contribute to the ruggedness and long life of *Langstons*. You get high speed and top quality rolls.

Samuel M. Langston Co.
CAMDEN 4, NEW JERSEY





SCIENTIFIC CONSTRUCTION* Makes The Big Difference In DRYER FELTS

WOODBERRY 887

REINFORCED DRYER FELT GIVES YOU SCIENTIFIC CONSTRUCTION

Determining Yarn Tensile Strength with 300-lb. vertical test. One of a series of comprehensive laboratory controls throughout production to assure uniformity in all Mt. Vernon-Woodberry products.

*Asbestos yarns woven into the face of patented Woodberry 887 dryer felts at scientifically determined intervals give you longer wear and smoother operation. Paper mills have learned to count on lowered steam consumption and consistent quality with Woodberry 887. For dryer felts that are low on cost, high on performance, specify Woodberry 887.

Mt. Vernon-Woodberry Mills

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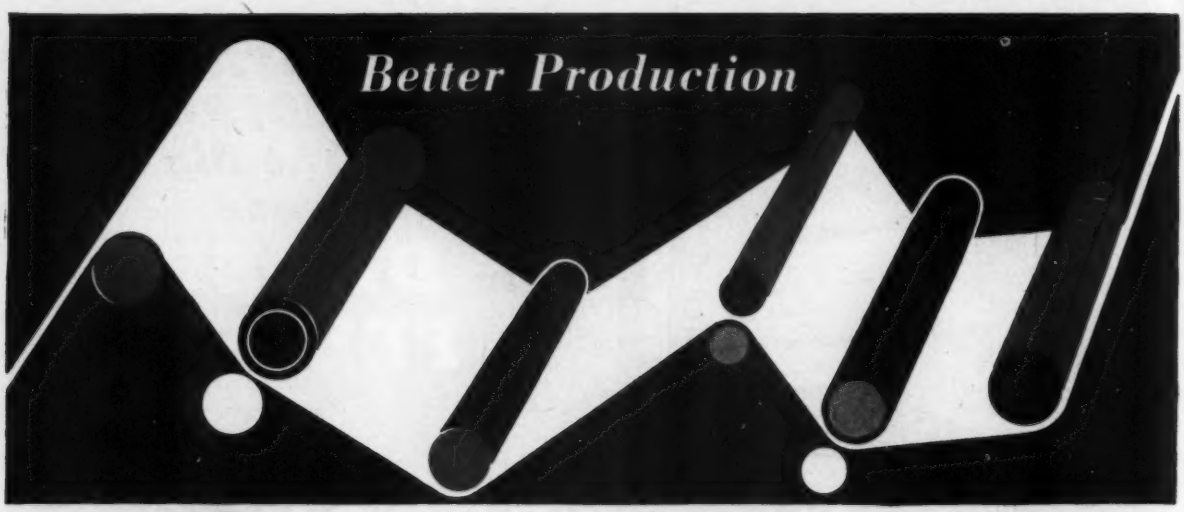

MANHATTAN RUBBER COVERED ROLLS

• OUR NEW NEENAH, WIS. PLANT IS DESIGNED FROM THE GROUND UP TO HANDLE ANY SIZE ROLL COVERING MOST EFFICIENTLY

You get better production with Manhattan rolls, because they maintain uniform density and perfect crown . . . because they don't oxidize, harden, corrugate or crack . . . and because there can be no separation of rubber from metal core. Yes, Manhattan Rubber Covered Rolls give you better production—and they do this long after you would have to replace other rolls. That's what we mean by MORE USE PER DOLLAR. A specialist from the R/M roll covering plant nearest you will cheerfully advise you or quote on your specifications. Call him next time.

ROLL COVERING PLANTS AT PASSAIC, N. J. . . . . NEENAH, WISCONSIN . . . NORTH CHARLESTON, S. C.
TEXTILE ACID TANKS AND PIPE RUBBER LINED AT PASSAIC, N. J. AND NORTH CHARLESTON, S. C.

R/M

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Packings • Brake Linings • Brake Blocks
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MR-912

Washington questions . . . American money curtails American markets

Is President Eisenhower trying to please everybody by taking both sides of every political question arising at Washington? Is his genius for tactical organization at work developing a long-pull program in every phase of government operations that will soon begin to take form without the slightest hint of uncertainty? These are the two questions in the mind of students of the Washington picture. If the latter thought is correct, his strategic plan may even have envisaged the Harry Dexter White-Harry Truman sensation.

One thing seems to be certain: Mr. Eisenhower's foreign trade ideas are tending toward the support of further reduction of tariff protection to domestic industry. The fact that his appointees to the Randall Commission to study this problem were predominately of the low-duty or free trade school of thought sustains this premise. The flood of propaganda in favor of lower tariffs has discouraged many of the hitherto strong advocates of a fair degree of protection for domestic industry.

PI take heart

The paper industry, however, which has always been strongly against any further duty rate reductions in its field, can take heart from the fact that some of the Congressional members of the Randall Commission are violently opposed to any further tariff concessions to foreign nations. If the majority report of the Commission urges further tariff rate cuts, this group is almost certain to go on record with a minority report. Latest reports from Washington are that this Commission is rushing to complete its work so that a report can be filed immediately after Congress reconvenes in January, even though the law establishing the Commission gave the group until 60 days after Congress reconvenes to file its analysis.

The manner in which American capital is migrating to other countries is analyzed in a recent report by the Department of Commerce, which finds that United States money invested abroad doubled in the years 1940 to 1950, reaching a total of $3,800,000,000. In the 10-year period, this report shows, from $350 to $500 million went from this country to Canada's pulp and paper industry, much of these funds being for the manufacture of products in Canada for sale in the United States market. This development has paralleled the progressive reduction of United States duties on paper, and imports in 1953 are greater in dollar value than ever before in history.

A notable example of the trend toward exportation of United States capital is the plan to build a $6,000,000 mill in Brazil for the utilization of eucalyptus wood. More than half of the funds required come from the American backers of the plan, the bulk of the balance from this company's European affiliates. While such mills abroad for the production of paper and pulp increases the available world supply of paper and pulp, they restrict the export market for American products. American money is thus being used to curtail American markets, if not to provide mills for additional invasions of the United States market with foreign-made goods.

The way toward clarification

While the foreign trade situation as developing in Washington is of prime importance to the paper industry, other phases of the future administration program seem to be on the way toward clarification. Efforts to satisfy labor's demands for softening to the Taft-Hartley law are not being met, but there will be changes which the administration deems to be needed for the best interests of all the people, not the labor unions alone.

Changes in policies in the Federal Trade Commission are in sight, with no easing of restrictions on anti-trust activities, but a growing appreciation that business is not necessarily a law-breaking segment of the people.

The National Labor Relations Board is changing its attitude, and though the unions claim this is growing into an anti-labor administration, an effort is being made to demonstrate that the real purpose is to properly serve all the people, whether unions, non-union labor, white collar workers, employers or investors.

While politics are rampant at Washington, the paper mills are tending strictly to their knitting. Paper is being sold as rapidly as it is produced. There is little doubt that 1953 will break all production records, and for nine months the output is 10 per cent over the same months of 1952.

Financial Reports

A strengthening of the nation's security markets has shown paper mill issues well in the lead. Fostering the advance were a continuance of dividends and a high rate of income.

Net incomes

A. P. W. Products Co.—A deficit of $122,875 was incurred in the 39 weeks ended September 27, as compared with an income of $68,024 in the comparable 1952 period.

American Writing Paper Co.—Net income for the first nine months of 1953 was $418,392, as compared with $201,593 for the same months of 1952.

Celanese Corp. of America—Net income for the nine months ended September 30 was $9,121,974, compared to $6,644,046 a year before.

Certain-Teed Products Corp.—Net income for nine months to September 30 was $2,983,031, as compared with $2,814,686 a year ago.

Continental-Diamond Fibre Co.—Net nine months income was $686,732, as compared with $533,214 a year ago.

Dixie Cup Co.—Net income for nine months ended September 30 was $2,272,697, as compared with $1,890,827 a year ago.

Eastern Corp.—Net income for nine months ended September 30 was $599,363, as compared with $768,310 in 1952.

Flintkote Co.—Net income for the 40 weeks to October 10 was $3,943,294, compared with $3,680,294 a year ago.

Gair Co., Robert—Net income for nine months to September 30 was $4,621,699, as compared with $4,107,265 for the previous year.

Gaylord Container Corp.—Net earnings for the first nine months of 1953

totaled $5,653,615, as compared with $5,544,228 in the same period of 1952.

General Box Co.—Net income for the nine months to September 30 was $593,669, compared with $570,010 a year before.

Great Northern Paper Co.—Net income for the nine months ended September 30 was $3,436,743, as compared with $3,376,284 in the same months of 1952.

Hammermill Paper Co.—Net income for the nine months ended September 30 was $954,038, compared to $937,982 a year ago.

Hinde & Dauch Paper Co.—Net income was $2,306,747, as compared with $2,257,560 a year ago.

Hollingsworth & Whitney Co.—Net income for the 39 weeks ended September 27 was $1,739,986, as compared with $1,787,220 the previous year.

International Paper Co.—Net income for the year to September 30 was $42,976,489, as compared with $36,587,661 for the first three quarters of 1952.

Keyes Fibre Co.—Net nine-month income was $749,111, as against $753,110 a year ago.

Lily-Tulip Cup Co.—Net nine-month income was $2,507,559, as against $2,193,388 a year ago.

Masonite Corp.—Net profit for the year to August 31 was $3,671,120, compared to $3,368,203 the previous year.

The Mead Corp.—Net income for the first nine months was $3,885,181, as against $3,439,949 in 1952.

Minnesota & Ontario Paper Co.—Net income for the first three quarters was $4,246,631, as compared to $3,836,197 for the same 1952 period.

National Cellulose Corp.—Net profit for the year to March 31 was $12,304, against $19,471 in the preceding year.

National Container Corp.—Consolidated net income for the first nine months was $2,873,000, compared with $3,077,000 a year ago.

National Gypsum Co.—Net income for the first six months of 1953 was $3,990,774, compared with $3,491,622 for the like period in 1952.

National Vulcanized Fibre Co.—Net nine-month income was $772,438, as compared with $387,424 in 1952.

Nekoosa-Edwards Paper Co.—Net income for the first nine months was $1,337,000, a drop of $237,000 from last year.

Olin Industries Inc.—Consolidated net income for the first nine months was $10,893,634, as compared to 1952's $8,494,731.

Oswego Falls Corp.—Net nine-month income was $1,227,731, compared with $971,181 a year ago.

Oxford Paper Co.—Net income for the nine months ended September 30 was $2,012,313, as compared with $2,032,325 in 1952.

Pacific Mills Ltd.—Net profit for nine months to October 3 was $1,879,560, as compared to $585,000 for the same period last year.

Puget Sound Pulp & Timber Co.—Net income for the nine months ended September 30 was $2,054,700, compared to $2,181,091 a year ago.

Rayonier Inc.—Net nine-month income was $8,154,187, as against $8,247,590 in the same months of 1952.

Riegel Paper Corp.—Net income for 39 weeks ended September 28 was $1,178,121, as compared with $679,148 for the comparable period a year ago.

St. Lawrence Corp. Ltd.—Net profit for the first nine months of 1953 was $3,655,824, as compared to $4,599,232 last year.

St. Regis Paper Co.—Net income for the nine months ended September 30 was $10,149,983, compared with $8,555,863 for the same period last year.

Scott Paper Co.—Net income for the nine months to September 30 was $8,532,831, as compared to $7,430,927 for the same months of 1952.

Sorg Paper Co.—Net income for the first nine months of 1953 was $252,142, as compared to $138,698 for the same months of 1952.

Stone Container Corp.—Net earnings for the first six months amounted to $661,034, as compared with $738,713 in the first half of 1952.

Sutherland Paper Co.—Net nine-month income was $2,272,364, as compared with $1,827,105 in the same 1952 period.

Union Bag & Paper Corp.—Net income for the first three quarters was $7,612,102, as compared with $8,123,600 a year ago.

United Board & Carton Corp.—Net income for the 12 weeks ended August 22 was $135,870, as compared to $205,424 a year ago.

United States Envelope Co.—Net income for the six months ended June 30 was $517,549, as compared with $382,708 a year ago.

United States Gypsum Co.—Net profit in the first nine months was $15,329,481, as compared to $14,683,140 last year.

United Wallpaper, Inc.—Deficit for the year ended June 30 was $488,688, as compared with a deficit of $590,628 in the previous fiscal year.

Weyerhaeuser Timber Co.—Net income for the nine months to September 30 was $27,893,783, as compared to $27,846,217 a year ago.

Dividend declarations

Abitibi Power & Paper Co. Ltd. has declared a quarterly dividend of 30 cents on the common, payable January 1 to stock of record December 1.

Canadian Celanese Ltd. has voted a quarterly dividend of 30 cents on the common, payable December 31 to stock of record December 4.

Champion Paper & Fibre Co. has declared a common dividend of 50 cents, payable December 1 to record of November 10, and a preferred dividend of $1.12½, payable January 1 to record of December 8.

Cornell Paperboard Products Co. has declared its regular quarterly dividend of 25 cents, payable December 10 to stock of record November 27.

Dixie Cup Co. has declared a quarterly dividend of 45 cents on the common, payable December 19 to stock of record December 4.

Eastern Corp. has declared a cash dividend of 25 cents per share on the common stock, payable December 15 to stockholders of record December 1.

Gair Co., Inc. (Robert) has declared a quarterly dividend of 37½ cents per share on the common stock, payable December 10 to stockholders of record November 20.

Glatfelter Co. (P. H.) has declared a dividend of 25 cents a share on the common stock, payable November 2 to stockholders of record October 15, and a quarterly dividend of 56¼ cents a share on the 4½ per cent cumulative preferred stock, payable November 2 to stockholders of record October 15.

Great Northern Paper Co. has declared an extra of 60 cents and the usual 60-cent quarterly dividend on the common stock, both payable December 10.

International Paper Co., has declared a stock dividend of 10 per cent on the common stock and the regular quarterly cash dividend of 75 cents on the common, payable on all shares to be outstanding, including the shares issuable under the stock dividend. Both dividends are payable December 21 to stock of record November 20.

Kimberly-Clark Corp. has declared the regular quarterly dividend of $1 a share on its 4 per cent convertible preferred stock, payable February 1 to stock of record January 8. Also declared was the regular quarterly dividend of 60 cents a share on the common stock, payable January 2 to stock of record December 11.

Marathon Corp. has declared a 30-cent quarterly dividend on the common stock, payable November 30 to stock of record November 6, and a $1.25 dividend on preferred stock, payable January 2 to stock of record December 18.

Mead Corp. has declared a regular quarterly dividend of 45 cents per share on the common, and a stock dividend of 1/40 of a common share for each such share held. Shares issued as a stock dividend will participate in the quarterly dividend of 45 cents. Both dividends are payable December 1 to holders of record November 2. Also, the regular quarterly dividend of $1.0625 per share

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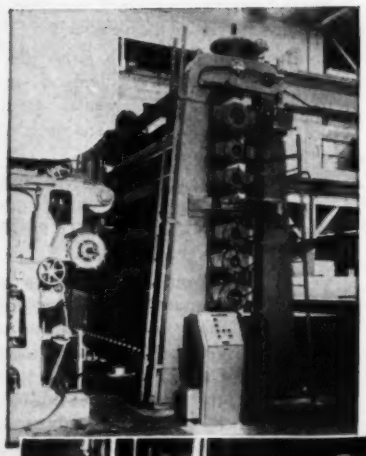
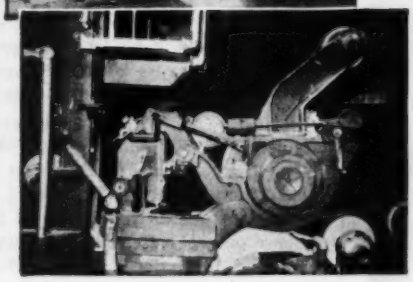


CALENDER STACK

Modernize with a new Puseyjones

(YOU FILL IN THE BLANK)



WATERMARKING ATTACHMENT

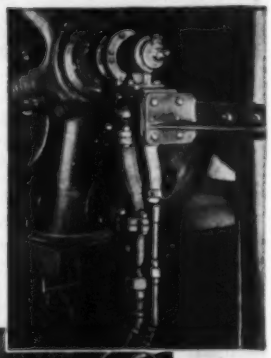
For 11 months — all during 1953 — we have urged you to modernize your paper-making machinery in order to stay competitive. We have told you about the production advantages of a new Dry Part, a new Press Part, a new Calender Stack, a new Slice, a new Winder, a new Reel, new Steam Joints, and other machine improvements.

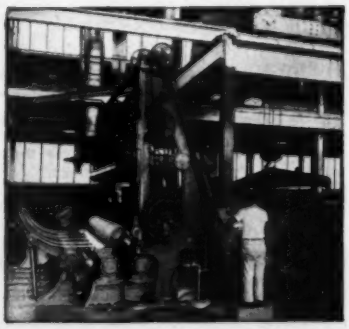
Now . . . in December . . . it's up to you. Talk it over with a Puseyjones engineer. Write us today—we will have our District Representative call.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Fabricators and Welders of all classes of Steel and Alloy Products
Wilmington 99, Delaware, U.S.A.

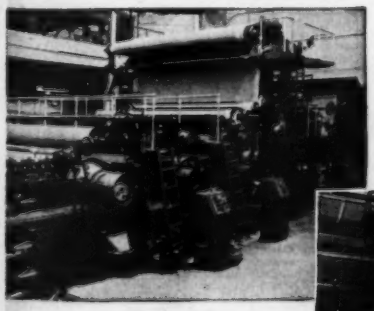
THE SIGN OF TRADE MARK SUPERIOR QUALITY

STEAM JOINTS



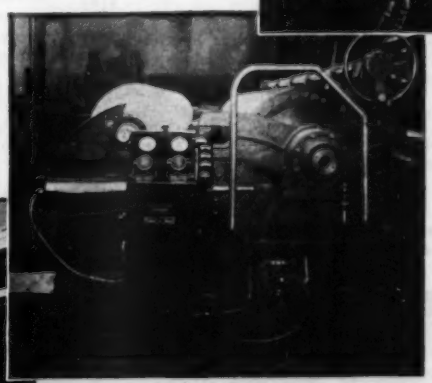


WINDER



PRESS PART

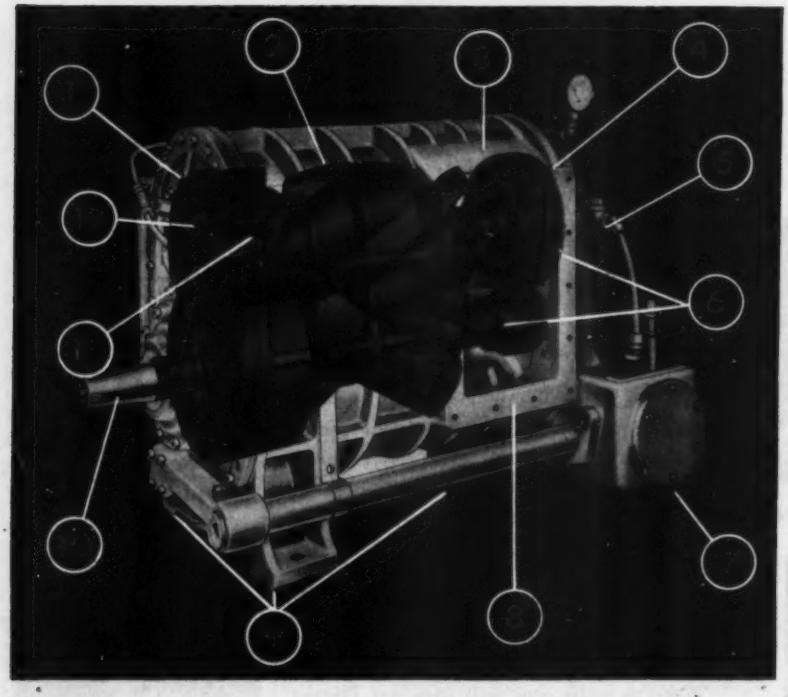
DRY PART



REEL

Standardaire® Blowers

FEATURES OF THE BLOWER THAT REPRESENTS THE FIRST SIGNIFICANT IMPROVEMENT IN BLOWER DESIGN IN SEVERAL DECADES



1. **Self-Centering Re-Entrant Bearing Carriers** provide for positive central location of the bearings. Carriers prevent warping of the housing, and also fix the clearance between the rotors and the housing.
2. **Rigid Shape Screw-Type Rotors,** an important feature, make possible higher maximum pressures. With Standardaire Blowers, the rotors pull the air in gently and squeeze it out evenly and quietly.
3. **One-Piece Housing** for strength, accuracy, and stability of dimensions.
4. **Helical Gears** are made of heat-treated alloy steel hobbed and shaved to extreme accuracy for quiet operation.
5. **Pressure Lubrication** system including pump, reservoir and filter. Individual oil lines lead to the gears and all bearings.
6. **Axial Air Flow** actually different in theory and performance. Standardaire Blowers embody unique features of advanced engineering and construction.
7. **Oil Reservoir** is provided in the gear cover on the suction end of the Blower to help keep the oil cool.
8. **Adapter Plates** are furnished with one of a multiple of standard drillings to accommodate various pipe sizes.
9. **Three-Point Mounting** eliminates distortion of Blower housing—facilitates application.
10. **Tapered Drive Shaft** for accurate and positive connection of coupling or pulley. The application of these parts does not affect the internal clearance of the Blower.
11. **Non-Wearing, Non-Leaking Balanced Pressure Labyrinth Seals,** the unique sealing arrangement which prevents air contamination. Clean air is assured at all times.
12. **High Capacity Anti-Friction Bearings** with special thrust provisions are used throughout to assure long life under desired load and speed requirements.

READ STANDARD
CORPORATION

WRITE FOR BROCHURE
on Standardaire Blowers, stating application required

BLOWER-STOKER DIVISION, 370 LEXINGTON AVENUE, NEW YORK 17, N. Y.

was declared on the 4¼ per cent preferred shares, payable December 1 to holders of record November 2.

Minnesota & Ontario Paper Co. has declared a quarterly dividend on the common stock of 50 cents per share, payable October 31 to shareholders of record October 2.

Monroe Paper Products Co. has declared a dividend of 15 cents a common share, payable December 15 to shareholders of record December 1.

National Container Corp. has voted the regular quarterly dividends of 15 cents per share on the common stock, payable December 31 to stockholders of record December 1, and 31¼ cents per share on the $25 par value preferred stock, payable December 10 to stockholders of record November 20.

Oswego Falls Corp. has declared a dividend of 25 cents, payable November 10 to stockholders of record October 26.

St. Regis Paper Co. has declared a dividend of 37½ cents a share on the common stock, payable December 1 to stockholders of record October 31, and the regular quarterly dividend of $1.10 a share on the preferred stock, payable January 1 to holders of record December 4.

Scott Paper Co. has declared a quarterly dividend of 75 cents per share on the common stock, payable December 10 to shareholders of record November 20, and the regular quarterly dividend of

New York Stock Exchange—Stocks

	Closing Prices Nov. 19, 1953	Oct. 20, 1953
A.P.W. Products	* 2⅞–3	* 2⅝–3⅛
Celotex	16	16⅛
Same Preferred	* 15⅝–16	* 15⅝–16⅛
Certain-teed Products	12⅝	12
Champion P.&F. Co.	33⅜	31
Same Preferred	100	100½
Chesapeake Corp.	27½	* 27⅛–28¼
Container Corp.	43⅝	41⅝
Same Preferred	*160⅝–162	99
Continental Diamond	11	10½
Crown Zellerbach	34⅝	30⅝
Same Preferred	100½	99
Dixie Cup	39	37⅞
Eastern Corp.	14	14⅝
Robert Gair	18	18⅝
Gaylord Container	25	22⅞
Great Northern Paper	52⅛	52⅜
Hammermill	13	13
International Paper	52⅝	54⅛
Same Preferred	102⅛	*100½–102⅜
Kimberly Clark	46⅛	43⅞
Same Preferred	*102–106	*101–103
MacAndrews & Forbes	* 42¼–43	42⅝
Marathon	18⅞	19⅜
Masonite	17⅛	18
Mead Corp.	* 24–24⅛	26⅛
Same Preferred	* 85⅜–86⅛	* 85⅛–86⅛
National Container	10⅛	9⅛
Same Preferred	19⅛	19⅛
Rayonier Inc.	25⅛	23⅛
Same Preferred	33⅛	31⅛
Scott Paper	69⅝	65⅝
Same $3.40 Preferred	* 87–88⅛	87
Same $4.00 Preferred	103	*102½–104
St. Regis Paper	19⅛	20⅛
Same Preferred	* 85–87½	* 83–83⅜
Sutherland Paper	* 29⅝–30⅜	29⅞
Same Preferred	*103–104¼	106
Union Bag & Paper	45	43⅝
Union Board & Carton	* 14⅛–14⅛	* 14–14⅛
United Wallpaper	1⅝	1⅞
Same Preferred	* 17–18	* 18½–19⅛
U.S. Gypsum	112½	105
Same Preferred	173	*170–173½
West Virginia P.&P.	new 22⅝	23
Same Preferred	*104½–106	*104½–106

New York Stock Exchange—Bonds

Celotex 3½%		
Champion P.&F. Co. 3⅝	103⅝	91½
Mead Corp. 3⅝		

American Stock Exchange—Stocks

American Writing	13¼	12¼
Brown Co. Common	8⅝	8⅝
Same $5 Preferred	91	
Same $3 Preferred	60⅜	
Puget Sound	30⅛	30½

* Closing Bid and Asked Prices.

85 cents per share on the $3.40 cumulative preferred shares and $1 per share on the $4.00 cumulative preferred shares, both payable February 1 to shareholders of record January 19.

Sorg Paper Co. has declared a dividend of 25 cents a share on common stock for payment September 28 to holders of record September 18, and the regular quarterly dividend of $1.38 on the 5½ per cent preferred issue, payable October 1 to record of September 15.

United Board & Carton Corp. has declared a dividend of 25 cents on the common stock, payable December 10 to stockholders of record November 30.

United States Gypsum Co. has declared an extra of $1.50 and a regular quarterly dividend of $1 on the common, both payable December 14 to stock of record December 4.

West Virginia Pulp & Paper Co. has declared a quarterly dividend of 35 cents on the common, payable January 2 to stock of record December 18.

Weyerhaeuser Timber Co. has declared a year-end dividend of $1 a share, payable on December 7 to shareholders of record November 30.

Paper mill corporate changes

Bath Fibre Co., a new firm headed by Claude Farr, has purchased Cushman-Rankin Co. mill at Bath, N.H. Operations, discontinued after a fire at this mill a year ago, will soon be resumed.

Dixie Cup Co. has authorized a new issue of 200,000 shares of $50 par preferred stock and proposes to sell 153,000 of the preferred shares to its stockholders at not less than par on a one-for-five basis.

Marathon Corp. has arranged to borrow $8.5 million to repay short term borrowings and increase general funds. It has issued a $3.5 million promissory note to Northwestern Mutual Life Insurance Co., payable October 1, 1966-69, and has also established a $5 million revolving credit with a Bankers Trust Co. group, which provides for issuance of 3½ per cent notes due September 10, 1958.

Waterbury Corrugated Container Corp. has purchased a block of about 80,000 shares of Monroe Paper Products Co. An official of the Connecticut firm has been elected a director of the Monroe firm.

Weyerhaeuser Timber Co. has authorized the distribution to its shareholders of 621,000 shares of stock of Fiber Products, Inc., a wholly owned subsidiary. This represents the entire outstanding stock of Fiber Products, Inc. The Fiber stock will be distributed to Weyerhaeuser shareholders of record November 30 on a basis of one share of Fiber for each 10 shares of Weyerhaeuser.

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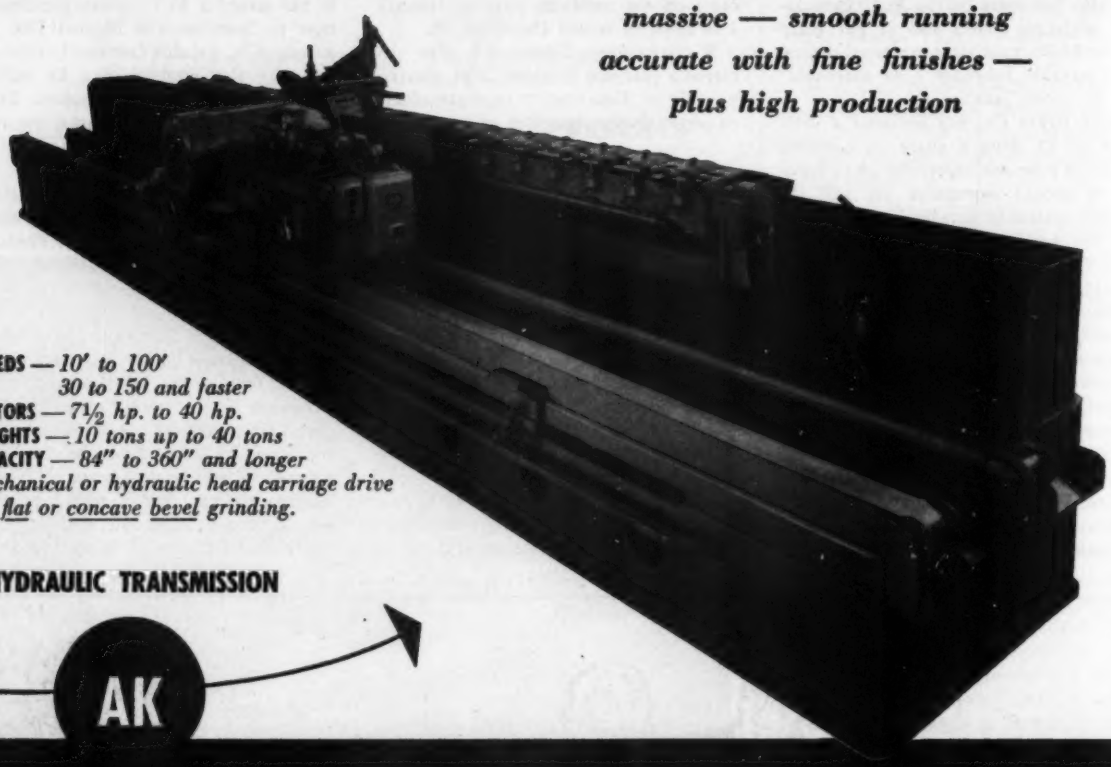

SPEEDS — *10′ to 100′*
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The Paper Industry

December 1953

Marketing trends in focus

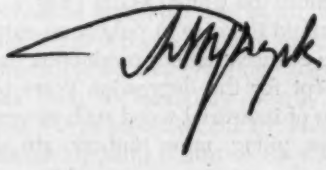
IN THIS ISSUE we are bringing into focus the various factors that determine the pattern of marketing trends in pulp and paper. This includes an evaluation of pulpwood supplies as presented in two articles, one by H. R. Josephson *et al* and another by John H. Vogel. While agreeing that, from a long-range point of view, U.S. pulpwood requirements can be met only through intensive management of our forest resources – especially on the 4,000,000 small-holdings – Dr. Josephson also mentions new pulpwood sources, greater utilization of hardwoods, and logging and sawmill residues which, if fully exploited, could in the immediate future supply the equivalent of 30,000,000 cords annually. Mr. Vogel, according to whose estimates the United States pulp mills will require some 30,000,000 cords pulpwood by 1960, shows how this requirement can be met.

The nature of the American paper market is colorfully described by Dr. Charles W. Boyce. His contention is that the market comes into existence "not by sovereign right or gratuitous demand" but by man's creative efforts only, and that it can be made to absorb capacity production of pulp and paper through intensive and improved merchandising techniques. On the subject of merchandising trends, Dr. D. C. Everest mentions complete integration, the making of longer-term contracts, and stepped-up advertising. His estimate of total consumption of paper and paperboard in 1954 is close to 34,000,000 tons – and this despite an anticipated further decline of the export market which, according to the latest report from Washington, already shows a 53 per cent drop from that of a year ago. In an inter-industry relations report – attempted for the first time – W. LeRoy Neubrech presents an actual break-down of pulp and paper products among the various segments of the national industry, and shows how these data can be used as a basis for projecting future markets.

New products and new uses for improved products provide the catalytic spark for the characteristic buoyancy and vigor of the American market. Trends in these developments, as they pertain to the paper industry, are enlighteningly discussed by G. H. Chidester.

There is a general awareness within the industry that a decade of shortages and/or allocation practices has weakened our ability to sell creatively. What is being done to regain the lost confidence and selling ability is shown in a lucidly written article featuring advance planning and training *a la* Scott Paper Company. The series of articles on Marketing Trends featured in this issue is concluded with an overall economic survey of the pulp and paper industry as seen by Dr. Louis P. Stevenson, who anticipates no decline in business activity during the coming year.

Both the authoritative treatment and the timeliness of the subject matter make stimulating reading, at the same time inspiring implicit confidence in the future of the pulp and paper industry. With this thought, we wish all our readers a very Merry Christmas and a Happy and Prosperous New Year.



PRODUCTION AND APPARENT CONSUMPTION OF PULPWOOD, WOOD PULP, AND PAPER AND BOARD, IN THE UNITED STATES, 1899 - 1952
LEGEND
PAPER AND BOARD
WOOD PULP
PULPWOOD

Figure 1

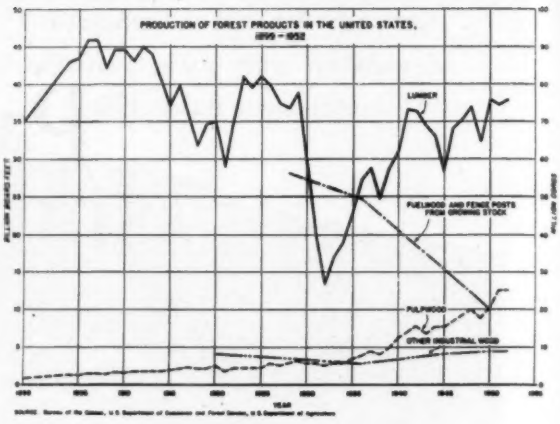

PRODUCTION OF FOREST PRODUCTS IN THE UNITED STATES, 1899 - 1952
LUMBER
FUELWOOD AND FENCE POSTS FROM GROWING STOCK
PULPWOOD
OTHER INDUSTRIAL WOOD

Figure 2

Trends in pulpwood supplies in the United States

H. R. JOSEPHSON
Chief, Division of Forest Economics
Co-authors: G. F. Burks, A. S. Todd, D. Hair
Division of Forest Economics, U. S. Forest Service

▸ Pulpwood cut in the U. S. A. has reached a new high of 25,100,000 cords—a sixteen-fold increase since the turn of the century. With ever increasing requirements—from the present 35,000,000 to possibly 52,000,000 cords by 1975—what are the possibilities of raising pulpwood cuts in the South, the North, and the West?

PROBLEMS OF RAW MATERIAL SUPPLIES for pulp and paper in the United States mainly involve the use of wood, since pulpwood is the basic raw material for the pulp industry. More than 50 million tons of pulpwood were used by United States pulp mills in 1952, and about 7.8 million tons of waste paper, largely derived from wood. Straw, rags, bagasse, and other fibrous raw materials totaled only 1.2 million tons in 1952, or the equivalent of about 2 per cent of the total consumption of basic raw materials used for pulpwood.

Pulpwood production in the United States has shown a tremendous expansion in the past two decades in response to the phenomenal growth of the pulp and paper industry (Fig. 1 and Table 1). In 1951, for example, production of paper and board reached an all-time high of 26 million tons, and wood pulp 16.5 million tons. Pulpwood cut in the United States likewise reached a new high of 25.1 million cords.

Pulpwood is major claimant of U.S. timber

With this great expansion of the pulp industry, production of pulpwood has now reached a point where it is second only to lumber among the various forest products cut in the United States (Fig. 2). In contrast to a sixteenfold increase in pulpwood output since the turn of the century, lumber production has been fairly stable except for the depression years of the 1930's. Production of industrial wood such as veneer logs and bolts, poles, piling, mine timbers, etc., has likewise shown no pronounced change in trend since 1920. On the other hand, production of fuelwood and fence posts from growing stock has declined markedly during the same period; in many areas this has permitted a corresponding increase in pulpwood cut. With the narrowing of the spread between production of lumber and pulpwood, competition for available supplies has increased accordingly.

South leads in pulpwood production

Forests of the southern United States (Fig. 3) today are providing more than half the nation's total pulpwood output. Pulpwood production to supply the rapidly growing pulp and paper industry in the South has increased from about 1 million cords in 1930 (Fig. 4 and Table 2) to 14.6 million cords in 1952. Thus, the cut of southern pulpwood is now equivalent to about half the volume of sawlogs produced in this region and about a quarter of the total timber cut for all products, including fuelwood. To an increasing extent the same sizes and species of timber are utilized for lumber and pulpwood.

The tremendous growth of pulp and paper industries in the South has resulted from a number of favorable conditions prevailing in this region, including

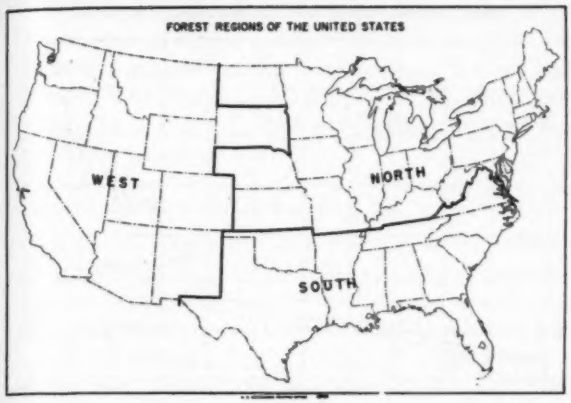


Figure 3

good location with respect to the nation's principal markets, available supplies of relatively cheap southern pine timber, reasonable security of future raw material supplies based upon rapid tree growth, ample supplies of relatively cheap labor, year-long woods

▸ While the answer from a long-range point of view lies in improved forest management, expansion into southern Alaska and the Rocky Mountains could immediately open new pulpwood sources and permanently sustain an annual cut of 2,000,000 cords.

work and comparatively easy logging conditions, availability of water, chemicals and power, and excellent rail, water and highway transportation facilities.

Although the lumber and pulp industries in the South are faced with declining softwood timber supplies in many areas, the effect on the pulp industry may be less serious than for sawmills because of stronger bargaining power and ability to use lower grade material that the lumber industry cannot use so effectively. Nevertheless, the southern pulp industry can continue to expand safely only with more definite action programs to assure its raw material supply.

In the North, including the Northeast and Lake States regions, the pulpwood cut totals about 6 million cords, or nearly one-fourth of all the pulpwood produced in the country (Fig. 5 and Table 2). Fifty years ago this region provided practically all the pulpwood cut in the United States, and as late as the early 1930's contributed more than half the total cut. Production has increased rather slowly in the past two decades, reflecting local depletion of softwood timber resources, consequent high costs of raw materials, and other factors such as stream pollution problems. At the turn of the century, the North produced more than half of the 35 billion board feet of lumber cut in the United States, but production recently has amounted to only 5 billion feet annually (Fig. 5 and Table 3). Thus, in 1952 the 6 million cords of pulpwood cut was equivalent to more than half the cut of sawlogs.

In the West, production of pulpwood has steadily risen to a level of about 4.5 million cords a year, or about 20 per cent of the U. S. pulpwood cut (Fig. 6 and Table 2). This is about four times the level of output in 1930. Most pulp mills in this region are concentrated in Oregon and Washington, with a few of the newer plants located in California and Idaho.

Lumber production in the West has been increasing even more rapidly than the cut of pulpwood, and 1952 production of 19 billion board feet (Table 3) represented half of the total lumber cut in the United States. This output required about nine times the amount of timber used for western pulpwood.

U.S. pulpwood is predominantly softwoods

Spruce, fir, hemlock, southern pine, Douglas fir, and other preferred softwoods have long been the conventional species used for pulp and paper manufacture in the United States. In 1952, for example, softwoods

▸ Hardwood growth in the Northeast exceeds drain by more than 15,000,000 cords annually. A great increase in semichemical pulping of hardwoods is therefore anticipated.

▸ Potential softwood pulpwood in the form of logging and sawmill residues is estimated at more than 13,000,000 cords—with more than 60 per cent in the West, 30 per cent in the South, and 10 per cent in the North.

made up about 85 per cent of the total pulpwood cut (Fig. 7 and Table 2). In the South softwoods comprised 88 per cent, in the North 70 per cent, and in the West almost 100 per cent of the total pulpwood produced.

Preference for softwoods has likewise characterized most other forest industries. Of the lumber cut in 1952, for example, nearly 80 per cent was softwood (Table 3).

The rapid expansion in production of softwood pulpwood extending over the past 20 years is largely attributable to rapid development of the sulfate pulp industry, which has depended largely on resinous woods such as southern pine and Douglas fir. In 1952 kraft pulp accounted for 52 per cent of all pulp manufactured in the United States (Fig. 8 and Table 4). Sulfate pulp has supplied an increasing variety of large tonnage items such as container board, wrapping paper, etc., but use of bleached sulfate pulp for finer papers and dissolving pulp is also steadily increasing.

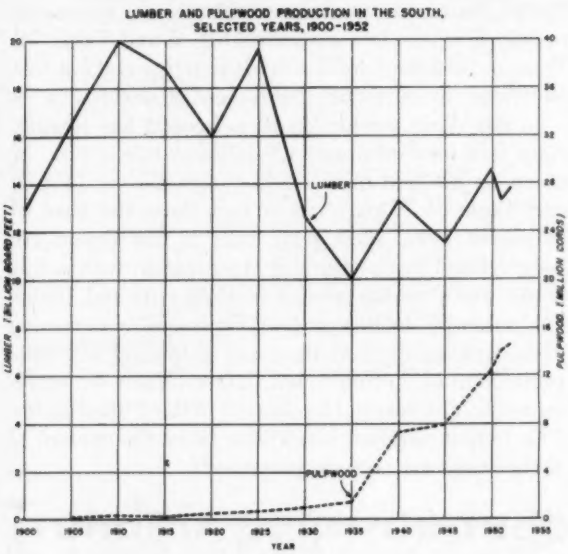


Figure 4

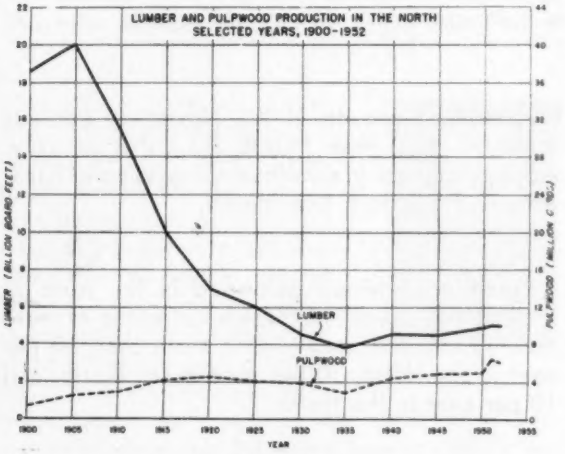


Figure 5

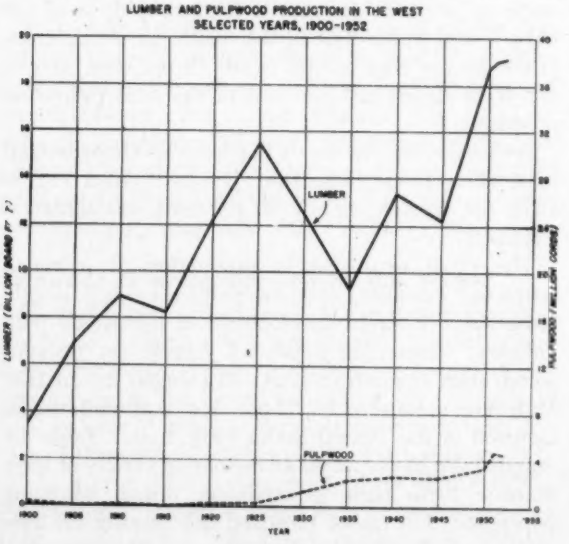


Figure 6

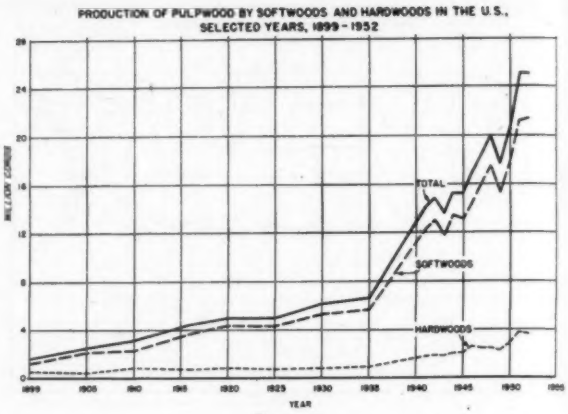


Figure 7

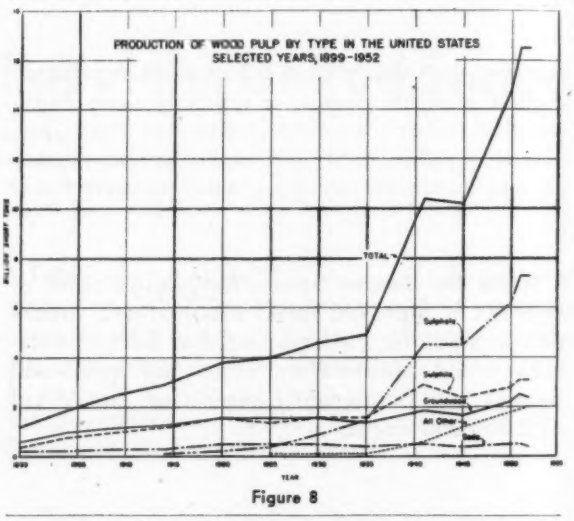


Figure 8

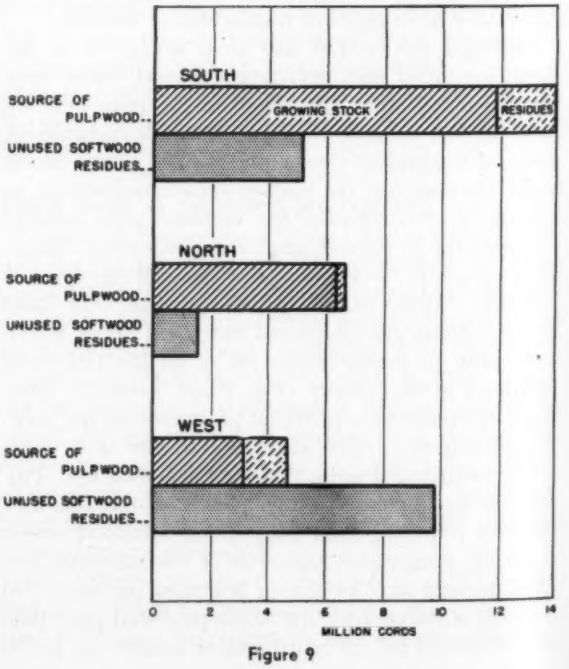


Figure 9

Sulfite and groundwood pulp production has shown lower rates of increase, reflecting in considerable part limited availability of the preferred long fibered, light colored woods such as spruce and fir. In some areas expansion may also be limited by other problems such as stream pollution.

Use of hardwoods is building up

While the proportion of hardwoods to the total cut of pulpwood in the United States (roughly 15 per cent) has not changed appreciably in the past three decades, the quantity produced has continued to increase from about 0.8 million cords in 1920 to 3.7 million cords in 1952 (Fig. 7 and Table 2). Since 1930 use of hardwoods has increased at about the same rate in both the North and South. In 1952 hardwoods made up about 30 per cent of the pulpwood produced in the North and about 12 per cent in the South.

Prior to 1940, hardwood pulpwood was used mainly for soda pulp for printing papers. Today, however, hardwood pulpwood is used in considerable quantities for both conventional pulping processes and particularly for newer semichemical processes. Soda pulp production has been relatively stable over the years since reaching a peak about 1920, whereas production of semichemical, defibrated, and exploded pulps has risen rapidly from 0.1 million tons in 1935 to 2 million tons in 1952 (Fig. 8 and Table 4). As late as 1939, the semichemical process was reportedly used by only 2 companies, with a capacity of less than 400 tons per day, whereas in 1952 twenty-five mills were employing this process with a combined capacity of 2,953 tons per day. This expansion in semichemical pulping is attributable to such factors as the limited availability and high cost of softwood pulpwood, the relatively low cost of large supplies of hardwoods, high yields of pulp ranging from 70 to 90 per cent, and the high grade and strength of the pulps produced. Semichemical pulps show large promise, not only for present uses such as corrugated board but also for newsprint and various other papers.

Pulpwood obtained mainly from timber growing stock

The expanding needs for domestic pulpwood have been met primarily by a larger cut of softwood "growing stock," i.e., trees currently and prospectively suitable for lumber, as well as for products such as pulpwood. At the same time, however, logging residues, cull trees, and mill residues that were formerly wasted are being used in increasing amounts (Fig. 9). In the South in 1951, for example, about 10.6 million cords of pine pulpwood and 1.3 million cords of hardwoods were cut from growing stock, or 84 per cent of the total pulpwood cut. About a million cords of pine pulpwood was produced from tops, miscut logs, and other woods residues left after logging for other products. About 0.8 million cords of pine pulpwood and 0.3 million cords of hardwood pulpwood came

Table 1—Production, imports, and consumption of pulpwood, wood pulp, paper and board in United States, selected years 1899-1952

Year	Pulpwood			Wood pulp			Paper and board		
	Production	Net imports	Apparent consumption (1)	Production	Net imports	Apparent consumption (1)	Production	Net imports	Apparent consumption (1)
	(Million cords)			(Million short tons)					
1899	1.6	.4	2.0	1.2	...	1.2	2.2	...	2.2
1904	2.5	.6	3.1	1.9	.2	2.1	3.1	...	3.1
1909	3.2	.8	4.0	2.5	.4	2.9	4.1	...	4.1
1914	3.6	.8	4.5	2.9	.7	3.6	5.2	.2	5.4
1920	5.0	1.1	6.1	3.8	.9	4.7	7.2	.5	7.7
1925	5.0	1.1	6.1	4.0	1.6	5.6	9.0	1.4	10.4
1930	6.1	1.1	7.2	4.6	1.8	6.4	10.2	2.1	12.3
1935	6.8	1.0	7.8	4.9	1.8	6.7	10.5	2.3	12.7
1941	14.2	2.2	16.4	10.4	.8	11.2	17.8	2.7	20.4
1942	14.9	2.2	17.1	10.8	.9	11.6	17.1	2.7	19.8
1943	13.6	1.7	15.3	9.7	1.0	10.7	17.0	2.4	19.4
1944	15.3	1.8	17.0	10.1	.9	11.0	17.2	2.3	19.4
1945	15.3	1.7	16.9	10.2	1.6	11.8	17.4	2.3	19.7
1946	17.0	1.9	18.9	10.6	1.8	12.4	19.3	3.2	22.6
1947	18.5	2.0	20.5	11.9	2.2	14.1	21.1	3.6	24.8
1948	20.0	2.3	22.3	12.9	2.1	15.0	21.9	4.2	26.1
1949	17.6	1.6	19.3	12.2	1.6	13.8	20.3	4.4	24.7
1950	20.7	1.8	22.5	14.8	2.3	17.1	24.4	4.6	29.0
1951	25.1	2.6	27.7	16.5	2.2	18.7	28.0	4.5	30.6
1952	25.1	2.3	27.3	16.5	1.7	18.2	24.4	4.6	29.0

(1) Data do not necessarily add to total because of rounding. Source: Bureau of the Census, U.S. Department of Commerce, and Forest Service, U.S. Dept. of Agriculture.

Table 2—Estimated pulpwood production in the United States by regions, and by hardwoods and softwoods, selected years 1899-1952

Year	Region							All regions		
	North			South			West			
	Hardwoods	Softwoods	(1) Total	Hardwoods	Softwoods	(1) Total	(2) Total	(1) Hardwoods	(1) Softwoods	(1) Total
	(Million cords)									
1899	.5	1.0	1.4	...	....	....	.2	.5	1.2	1.6
1905	.4	2.1	2.5	...	.1	.1	...	.4	2.1	2.5
1910	.7	2.1	2.8	.1	.1	.3	.1	.8	2.3	3.1
1916	.6	3.6	4.2	.2	.1	.2	...	.7	3.7	4.4
1920	.5	4.0	4.5	.3	.1	.4	.2	.8	4.3	5.0
1925	.4	3.7	4.1	.3	.3	.6	.3	.7	4.3	5.0
1930	.4	3.5	3.9	.4	.5	1.0	1.2	.8	5.3	6.1
1935	.3	2.6	2.9	.6	.9	1.4	2.2	.9	5.7	6.6
1941	1.1	3.3	4.4	.7	6.4	7.2	2.6	1.8	12.3	14.2
1942	1.2	3.8	5.0	.7	6.6	7.3	2.6	1.9	13.0	14.9
1943	1.1	2.9	4.0	.7	6.5	7.1	2.6	1.8	11.8	13.6
1944	1.0	3.5	4.6	1.0	7.2	8.2	2.6	2.0	13.4	15.3
1945	1.1	3.8	4.9	1.0	6.8	7.9	2.6	2.1	13.1	15.3
1946	1.3	4.2	5.5	1.2	7.6	8.8	2.6	2.6	14.4	17.0
1947	1.4	4.3	5.7	1.2	8.1	9.2	3.0	2.6	16.0	18.6
1948	1.2	4.2	5.4	1.3	10.1	11.4	3.3	2.6	17.5	20.0
1949	1.3	3.3	4.6	1.0	9.0	9.9	3.1	2.3	16.3	17.6
1950	1.7	3.3	5.0	1.3	11.2	12.4	3.3	2.9	17.6	20.7
1951	2.2	4.2	6.4	1.6	12.4	14.1	4.7	3.8	21.3	25.1
1952	1.9	4.2	6.0	1.8	12.8	14.6	4.5	3.7	21.4	25.1

(1) Data do not necessarily add to totals because of rounding. (2) Softwoods only. Source: Bureau of the Census, U.S. Department of Commerce, and Forest Service, U.S. Department of Agriculture.

Table 3—Estimated lumber production in the United States by regions, and by hardwoods and softwoods, selected years 1899-1952

Year	Region							All regions		
	North			South			West			
	Hardwoods	Softwoods	(1) Total	Hardwoods	Softwoods	(1) Total	(2) Total	(1) Hardwoods	(1) Softwoods	(1) Total
	(Billion board feet)									
1899	6.6	12.0	18.6	2.3	10.7	12.9	3.6	8.8	26.2	35.1
1905	7.3	12.8	20.1	3.3	13.3	16.5	6.9	10.5	33.0	43.5
1910	7.6	8.0	15.6	2.9	17.1	20.0	8.9	10.5	34.0	44.5
1915	4.7	5.3	10.0	2.8	18.8	21.6	6.2	7.5	29.5	37.0
1920	3.8	3.0	6.9	3.5	12.5	16.0	12.1	7.4	27.6	35.0
1925	3.0	2.5	6.0	4.1	15.5	19.6	15.3	7.7	33.3	41.0
1930	2.9	1.6	4.5	3.2	9.4	12.6	12.2	6.1	23.3	29.4
1935	2.4	1.5	3.8	2.3	7.7	10.0	9.1	4.7	18.2	22.9
1940	2.9	1.7	4.6	2.0	10.7	13.3	13.2	5.5	25.7	31.2
1941	3.3	2.0	5.3	3.3	12.2	15.5	15.7	6.6	29.9	36.6
1942	3.2	2.0	5.1	3.0	12.0	15.0	15.6	6.3	29.5	35.8
1943	3.2	1.7	4.9	4.2	10.2	14.3	15.0	7.4	26.9	34.3
1944	3.5	1.9	5.4	4.3	9.3	12.8	15.0	7.8	25.2	32.9
1945	2.8	1.7	4.5	4.1	7.4	11.5	12.1	7.0	21.2	28.1
1946	4.7	2.6	7.3	5.1	9.6	14.7	14.4	9.8	26.6	36.4
1947	3.4	2.0	5.4	4.0	9.0	13.0	16.3	7.4	29.0	36.4
1948	3.4	2.6	6.0	4.0	9.2	13.2	17.8	7.4	29.6	37.0
1949	2.6	1.5	4.1	3.1	8.5	11.6	16.5	5.7	26.5	32.2
1950	3.0	2.0	4.9	4.4	10.2	14.6	18.6	7.4	30.7	38.0
1951	3.0	2.0	5.0	4.7	8.7	13.3	18.9	7.7	29.5	37.2
1952	3.0	2.0	5.0	4.8	9.0	13.8	19.0	7.8	30.0	37.8

(1) Data do not necessarily add to total because of rounding. (2) Primarily softwoods; includes small quantities of hardwoods usually amounting to less than 50 million board feet per year. Source: Bureau of the Census, U.S. Department of Commerce, and Forest Service, U.S. Department of Agriculture.

Table 4—Woodpulp production in the United States by type for selected years 1899-1952

Year	Sulphate	Sulphite	Soda	Groundwood	All other(1)	Total(2)
	(Million short tons)					
1899	...	0.4	0.2	0.6	...	1.2
1904	...	0.8	0.2	1.0	...	1.9
1909	...	1.0	0.3	1.2	...	2.5
1914	0.1	1.2	0.3	1.3	(3)	2.9
1920	0.2	1.6	0.5	1.6	...	3.8
1925	0.4	1.4	0.5	1.6	0.1	4.0
1930	0.9	1.5	0.5	1.6	0.1	4.6
1935	1.5	1.6	0.4	1.4	0.1	4.9
1940	3.7	2.6	0.5	1.6	0.4	9.0
1941	4.5	2.9	0.5	1.9	0.6	10.4
1942	4.7	2.9	0.5	1.8	0.9	10.8
1943	4.2	2.4	0.4	1.6	1.0	9.7
1944	4.5	2.4	0.4	1.6	1.1	10.1
1945	4.5	2.4	0.4	1.7	1.2	10.2
1946	4.6	2.5	0.5	1.9	1.2	10.6
1947	5.4	2.8	0.5	2.1	1.3	11.9
1948	6.0	2.8	0.5	2.2	1.4	12.9
1949	6.0	2.5	0.5	2.0	1.2	12.2
1950	7.5	2.8	0.5	2.2	1.8	14.8
1951	8.6	3.1	0.4	2.5	1.9	16.5
1952(4)	8.6	3.1	0.4	2.4	2.0	16.5

(1) Includes semichemical, defibrated, exploded, etc. (2) Data do not necessarily add to total because of rounding. (3) Less than 50,000 tons. (4) Preliminary. Source: Bureau of the Census, U.S. Department of Commerce, and Forest Service, U.S. Department of Agriculture.

from cull trees. About 20,000 cords of pine pulpwood were obtained from mill residues.

In the West growing stock provided only 70 per cent of the 4.7 million cords of softwood pulpwood cut in 1951 (Fig. 9). The use of chips from mill residues has grown spectacularly in the West, and in 1951 about 1 million cords of material formerly wasted at sawmills and veneer mills in this region were converted into pulp, together with about 0.4 million cords of cull trees and other logging leftovers formerly left unused.

In the North 95 per cent of the pulpwood cut in 1951 came from growing stock, with the remainder derived from logging residues and cull trees.

U.S. imports considerable pulpwood, pulp, and paper

In spite of the tremendous growth of the domestic pulp and paper industry, the United States has continued to import increasing quantities of pulpwood, pulp, paper, and board (Fig. 1 and Table 1). Since 1900 net pulpwood imports have climbed from 400,000 cords a year to about a million cords in the period 1920-40, and to about 2 million cords annually in the years since 1940. Pulpwood imports, composed almost entirely of softwoods from Canada, made up 8 per cent of the pulpwood used in the United States in 1952.

Wood pulp net imports totaling 1.7 million tons in 1952 were not greatly different from quantities imported in most years since the early 1920's. Net imports of paper and board, consisting largely of newsprint, have steadily expanded and in 1952 were at a peak of 4.6 million tons.

In terms of wood requirements, the net imports of pulpwood, pulp, and paper represent the equivalent of about 11 million cords of pulpwood, or roughly 30 per cent of the 35 million cords of wood used to meet U. S. requirements for pulp and paper in 1952.

Dependence upon imports of pulpwood and wood pulp is greatest in the Northeast and Lake States, where softwood stumpage is high priced and in short supply. New York, for example, is one of the leading paper-producing States, but more than half of the pulpwood required by New York mills in 1947 was imported; considering both pulpwood and pulp, 75 per cent of the raw materials for New York's paper mills was imported. Even on the West Coast about 5 per cent of the pulpwood consumed has been imported from Canada.

Limited supplies of domestic softwood timber and uncertainties as to continued imports of pulpwood from Canada are believed to explain in part developments in use of aspen and other hardwoods that have occurred in the North since 1945.

Large increase estimated in future requirements for pulpwood

Considerable evidence points to continued expansion of the pulp and paper industry in the United States. Plant facilities now under construction are expected to increase capacity of the U. S. pulp industry to at least 21 million tons yearly by 1955. When fully used these new plant facilities will increase pulpwood requirements by at least 7 million cords over the 1952 level. A large part of this current expansion is taking place in the South.

Looking further ahead, the President's Materials Policy Commission recently forecast that requirements for paper and board by 1975 may reach about 52 million tons, or 80 per cent above present consumption. Under the assumptions of the PMPC report, U. S. pulpwood requirements are estimated at 51 million cords by 1975. Assuming that net imports of paper, pulp, and pulpwood will approximate recent imports of about 12 million cords, the indicated cut of domestic pulpwood would be about 39 million cords. This would represent an increase of 14 million cords over 1952 production, or an increase of 56 per cent.

Expansion into new areas possible

From a timber supply standpoint, the most promising opportunities for expansion of pulping capacity based on the conventional use of softwoods are to be found in southeastern Alaska. The national forests in this area contain 5 million acres of commercial forest land and an estimated 80 billion board feet of timber, which could permanently sustain an annual production of 1 million tons of pulp and paper, plus lumber and other timber products. The timber in this area is three-quarters hemlock and one-quarter spruce and other species, and is especially suitable for newsprint and other pulp and paper. Other advantages include opportunities for large hydro-electric developments, adequate supplies of suitable water at numerous sites, and extensive waterways favoring low logging costs and low transportation costs of manufactured products via the Inside Passage. Ultimately the interior of Alaska could supply large additional volumes of pulpwood.

In the continental United States, the Rocky Mountain region appears to offer the best opportunities for expansion from a raw material standpoint. Although locations in the Rocky Mountain area have not been considered as especially promising for pulp mills because of such factors as distance to markets, high costs of logging, and limited water supply, this region could support a number of additional pulp and paper mills. The forests of eastern Montana alone, for example, could sustain an annual cut of about 0.8 million cords of lodgepole pine and Douglas fir pulpwood, in addition to other products.

Thus Alaska and the Rocky Mountains could immediately supply several million cords of pulpwood without impacts on other wood-using plants. In the Douglas fir region of western Washington, Oregon, and California pulpwood production also could be expanded, based on conventional pulping species such as fir and Douglas fir and use of other pulping species such as lodgepole pine and red alder.

In the eastern United States, however, there is little prospect for an immediate expansion of pulpwood production from existing softwood stands without deleterious effects upon the timber resource or upon competing industries.

Greater use of hardwoods

Increased use of hardwoods in the eastern United States, on the other hand, offers many opportunities for large scale expansion of the pulp and paper industry. In 1945 it was estimated that hardwood growth exceeded drain by approximately 15 million cords annually; this surplus may well have increased as a result of such factors as better forestry, on the one hand, and continued conversion of stands to hardwoods as result of cutting practices which remove only the preferred softwoods. In the Lake States, for example, the pulping of aspen is well established, yet use of this species could be expanded by more than a million cords annually. As indicated earlier, development of semichemical pulp processes has opened the door to wider use of hardwoods for many types of paper and board.

Greater use of logging and mill residues and cull trees

Although use of logging and mill residues for pulp and paper has been rapidly increasing, there is still a great abundance of pulpable softwood material that is unused each year in the producing regions of the United States. The volume of potential softwood pulpwood in the form of unused woods and mill residues is estimated at more than 13 million cords, with more than 60 per cent in the West, 30 per cent in the South, and about 10 per cent in the North. Although it is difficult to estimate how much of this material is economically available for use, it seems certain that rising stumpage prices and the development of improved log barkers and other equipment will permit more efficient salvage and closer utilization of residues as time goes on. Since chippable material in the West occurs in relatively larger concentrations, both in the woods and at the mills, expansion in use of residues seems most likely to occur in the West. There are undoubtedly many opportunities, however, for further profitable use of woods and mill residues in the South and North.

Also available in all regions are substantial volumes of softwood cull trees that are suitable for pulping. It is roughly estimated that at least 4 million cords of cull or salvable dead trees generally unsuitable for lumber, veneer, and other quality products could be cut annually for pulpwood in the United States.

Greater use of wastepaper could also ease the pressure of expanding requirements on available pulp timber resources. Less than one-third of the paper now consumed is reused, and new techniques consequently could make available larger amounts of this papermaking material.

Ultimate objective is to grow more timber

In the long run the timber needs of all wood-using industries can be met only by growing more timber, with emphasis on desired species in economic locations. Preferred softwoods such as southern pine, spruce, and other desirable pulping species are being heavily overcut and in many areas replaced by less desirable hardwoods, many of low grade and limited usefulness. Depletion of timber stands has been reflected in a steady decline in available tree sizes and quality, with the result that sawmills have been increasingly forced into competition with pulp mills for trees which were formerly considered too small.

Today, there are some 460 million acres of forest land in the United States suitable and available for growing timber crops. This land has the capacity, ultimately, to grow all the timber that forest industries are likely to require, although current growth is well below this level. Sufficient timber probably can be grown through intensive management of the most productive and better located forest lands, less intensive management of much of the remaining forest area, and only protection on the least productive lands.

To meet the nation's prospective timber requirements, better management is needed on all types of private and public timber holdings but particularly on the 4 million small holdings owned by farmers and various individuals and corporations. Altogether the smaller properties comprise three-fifths of the commercial forest area of the country and constitute the chief source of raw material for the pulp industry.

In recent years land holdings of pulp companies and other wood-using industries have been greatly enlarged and pulp companies now own an estimated 20 million acres of forest lands. These holdings and those in many other large ownerships are receiving more and more intensive management to raise the level of forest production.

Potential pulpwood requirements in 1960

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IT IS A WELL-KNOWN FACT that one of the striking characteristics of the paper industry has been its remarkable ability to resist the diseases of old age—which frequently attack an industry that is more than 250 years old—and to maintain a healthy rate of growth with an ever-increasing population and the highest standard of living. It was this characteristic that led the National Industrial Conference Board to conclude, in its study, "Growth Patterns of Industry," that very few industries with statistical histories as long as that of the paper industry can boast an equally robust current rate of growth.

The growth of the United States paper industry in recent years is well illustrated by the production increase from 13,500,000 tons of paper and paperboard in 1939 to an estimated record-breaking output of 26,500,000 tons in 1953. Thus, over a period of 14 years, including war years when government restrictions prevented expansion, this industry has virtually doubled its output. Over the same period of time, the United States calculated consumption has increased from 16,000,000 to 31,000,000 tons and, on a per capita basis, from 244 to 390 lb.

▶ By 1960 U. S. pulp mills may require the equivalent of 31,000,000 cords pulpwood cut from domestic forests. What are the prospects that this requirement will be met?

It is interesting to note in this respect that, had there been no change in the consumption of paper per capita since 1939, total annual requirements would currently approximate 20,000,000 tons. Thus, it may be assumed that about 11,000,000 tons, or two-thirds of the increase in output since 1939, has been possible because this industry and the users of its products have constantly striven through extensive research and development programs to expand markets by creating new demands for established grades, and to develop new products capable of meeting the unique demands of new-use situations or capable, by reason of their relatively low cost, of substituting for higher cost materials.

The record of the industry's growth and the steady rise in consumption, both total and per capita, are then established facts. What does this mean in terms of pulpwood requirements and what may those requirements amount to in the future?

Progressively decreasing ratio of imported pulpwood

The use of wood as a raw material for the production of pulp to be converted into paper began in the United States in 1867, when mechanically ground wood was first produced in this country. At that time, the mills in the northeastern states, where virtually the entire industry was located, had ready access to large stands of suitable wood species (spruce and balsam fir) wholly capable of providing their limited requirements, which in 1869 amounted to only 2,000 cords. Shortly thereafter, with the development of chemical processes for making wood pulp, wood supplanted rags and straw as the principal raw material of the paper industry. By 1899 wood pulp comprised 53 per cent of the fibrous material used; waste paper and straw were each 16 per cent of the total, and rags and manila stock 11 per cent and 4 per cent respectively.

▶ The Northeast and Lake States should reach a pulpwood production of 9,000,000 cords in 1960, as a result of greater utilization of hardwoods, well-planned reforestation programs, and scientific forest management.

The United States initially was the sole source of wood required by our domestic paper industry, but it was not long before some mills located in close proximity to the Canadian border found it economically advantageous to procure wood in that country. By the end of the 19th century, when the United States consumption of wood was about 2,000,000 cords, imports of pulpwood were 270,000 cords, or 19 per cent of the total quantity consumed. In subsequent years the ratio of wood imports to consumption stabilized at about 18 per cent and continued at that level until about 1925. Shortly thereafter, as the industry expanded into the Pacific Northwest and South, where ample supplies of domestic wood were readily available, the importance of pulpwood imports as a part of total pulpwood requirements steadily declined to about 12 per cent immediately prior to World War II. It further decreased in the post-war years to the current level of approximately 8 per cent.

While this figure is low when considered from a national standpoint, on a regional basis about 30 per cent of the pulpwood consumed in the northeastern states and 25 per cent of that consumed in the Lake

States originates in Canada. These percentages have fluctuated little in recent years, as the volume of imports and cutting of domestic wood has increased at about the same pace.

Imports of pulp and paper 30 per cent of our consumption

The preceding discussion, however, deals only with U.S. consumption of pulpwood as such. To accurately gauge this country's total wood requirements and its supply situation, it is necessary to give proper consideration to imports of woodpulp and paper. As previously indicated, imports of pulpwood, after being maintained at about 18 per cent of our requirements through 1925, have declined to about 8 per cent. This would indicate a growing independence from foreign sources of wood. Actually, as a result of steadily mounting imports of pulp and paper, the dependence of the U.S. on imported wood, rather than remaining constant, steadily increased from 17 per cent in 1899 to almost 53 per cent in 1929, declining thereafter for reasons previously indicated to about 30 per cent in 1952. Thus, imports of wood in one form or another currently amount to about 10,500,000 of our total requirements of 35,000,000 cords.

It is clear then that our requirements for wood are currently large, and it is certain that in the years to come they will continue to grow as the consumption of paper and paperboard expands. It is not inconceivable that by 1960, United States mills will require the availability of the equivalent of 31,000,000 cords of wood cut from domestic forests.

▶ The Northwest, with increasing emphasis on sawmill waste utilization currently estimated at 30 per cent of its pulpwood consumption, should have no difficulty producing the equivalent of 5,000,000 tons pulpwood by 1960.

Increasing importance of South and Northwest

The progress toward national self-sufficiency in pulpwood has been able to move apace with overall industry growth because of the ascending importance of the South and Northwest states as producers and consumers of that material.

The relative increase in the importance of these two regions since 1919 is well illustrated by the fact that during the period 1919-1929, a decade during which total consumption of wood by the United States mills rose by slightly more than 2,000,000 cords, the South and Northwest increased their combined consumption by 1,900,000 cords. Between 1929 and 1939 the consumption of wood by mills in the area under consideration rose by 3,400,000 cords, while total United States consumption increased by only 3,200,000 cords as a result of a partially offsetting decrease amounting to 450,000 cords in the Lake and Northeastern states. Between 1939 and 1953 the increased use of wood by mills in these areas accounted for 11,800,000 of the overall increase of 15,700,000 cords.

Southern pulpwood

The South is currently producing pulpwood at a rate approximately 14,000,000 cords per year and, when mills now under construction enter the market for wood, production will of necessity be raised to about 15,000,000 cords.

The forested areas of the South are large and productive, but the total demand on them by the wood-using industries has been growing at a rate so fast that currently the drain on pine slightly exceeds the growth of that species. Thus, if the area is to raise its cut of pulpwood to 17,000,000 cords by 1960, it will require a continuing effort on the part of the consumers to encourage in every possible way greater production. The industry, it is true, owns substantial areas of forest land, but it cannot—and does not—hope to increase that ownership to the point of self-sufficiency. Obviously then—in addition to continuing present programs calculated to reduce wood losses due to disease, insects, and fire—the small landowner must be given every possible aid and encouragement, for it is on his lands that cutting and management practices must be improved if they are to continue as the principal source of wood.

▶ The South should be able to raise its pulpwood production from the current 14,000,000 cords to 17,000,000 cords in 1960 by the utilization of 2,000,000 cords hardwoods, increased utilization of sawmill waste, and a 10 per cent reduction of losses due to fire, insects, and diseases.

Further progress can and undoubtedly will be made in the increased utilization of hardwood in the South, the supply of such wood available being more than double that of softwoods. From 1946 to the present, the bulk of the increase in production has been in pine, and receipts of such wood have increased from 7,000,000 to 12,200,000 cords in the post-war period. During the same period, area mill receipts of pulpwood from hardwood trees have increased from 465,000 to 1,100,000 cords. Considerable improvement has occurred in the direction of greater use of hardwoods as technical advances have broadened the use of pulp made from such wood to include the manufacture of dissolving grades. Further expansion of their use may be expected as the adoption of high-yield pulping processes continues. If, by 1960, the quantity of hardwoods used can be increased to 2,000,000 cords, it does not appear unreasonable to assume that the balance of 15,000,000 cords could be made up by pine.

This will require an increase of 25 per cent over the record volume of 1952 to be achieved in seven years. It is true that an increase of 6,000,000 cords has oc-

curred in the past seven years, and it may be that no great difficulty will be encountered in reaching this goal. A 10 per cent decrease in losses due to fire, insects, and disease alone would increase the available supply of wood by over a million cords. Further, it is anticipated that as technical problems continue to be overcome, there will occur a substantial improvement

Estimated pulpwood consumption by regions for specified years, 1919-1952
(1000 cords)

	United States	Northeast	Lake	Appalachian	South	West
1919	5,479	2,875	1,295	861	367	311
1929	7,845	2,584	1,813	927	1,324	1,297
1939	10,818	2,290	1,659	939	3,717	2,326
1952	29,478	4,947	2,925	1,673	13,329	4,511

Note: Northwest—New England States, New York, New Jersey and Northern Pa.; Lake—Minnesota, Michigan, Wisconsin and Illinois; Appalachian—Ohio, Maryland, Tenn., S. Pa., West Virginia and Western N. Carolina; South—So. Carolina, Georgia, Florida, Oklahoma, Louisiana, Texas, Arkansas, Eastern Virginia and Eastern N. Carolina; West—California, Washington, Oregon and Idaho. Source: U. S. Bureau of the Census.

in wood utilization practices, with the result that a significant percentage of future requirements will be met from what is now waste. On the other hand, the increasing industrialization of the South and possible changes in the agricultural pattern of the area may introduce problems not now foreseen. In the absence

Estimated United States requirements for pulpwood, in all forms, 1899-1952
(1000 cords)

Year	Domestic pulpwood consumed	From Foreign Sources: Imported pulpwood consumed	Imported Pulp	Imported paper & board	Total imported	Total supply	Total Exported	United States Requirements	Per Cent U.S. Imported	
1899	1617	369	63	26	458	2075	125	1950	83.0	17.0
1904	2477	674	291	66	921	3398	128	3270	76.0	24.0
1909	3288	784	489	79	1362	4570	152	4418	72.6	27.4
1919	4448	1032	1089	859	2980	7428	620	6806	85.3	34.7
1925	5905	1088	2536	1916	5540	10845	293	10552	47.4	52.6
1929	6412	1232	3383	2074	7689	14021	492	13529	47.4	52.6
1935	6581	1037	3423	2974	7434	14025	801	13424	49.1	50.9
1939	9711	1131	3648	3301	7978	17689	864	17825	57.0	43.0
1941	14871	1708	1961	3781	7480	22351	1278	21065	70.6	29.4
1943	14190	1455	2288	3291	7014	21204	1035	20169	70.4	29.6
1945	15339	1673	3119	3330	8022	23361	920	22441	68.4	31.6
1947	17948	1774	4195	4994	10673	28313	980	27853	64.4	35.6
1948	19240	1949	3876	5563	11378	30618	773	29845	64.6	35.5
1949	18489	1476	3100	5728	10302	28771	752	27989	63.0	34.0
1950	22115	1512	4199	6053	11764	33879	731	33148	66.7	33.3
1951	24108	2414	3111	6237	11762	35870	1311	34559	69.8	30.2
1952	24411	2965	3481	6277	11742	36154	1258	34896	70.0	30.0

Source: Bulletin 1241, U.S. Dept. of Agriculture, U.S. Bureau of the Census.

of assurances that only a modicum of difficulty will be experienced in meeting future wood requirements, it will be to the interest of producer and consumer of wood to cooperate earnestly with one another that the prosperity of the region and permanence of the industry may be assured.

Pulpwood situation in the Northwest

The second largest increase in production will probably occur in the Pacific Northwest where, in addition to industry growth due to increases in population within the area, some expansion may occur to increase exports and to supply the requirements of a larger domestic area than is presently served by West Coast mills.

Initially the mills in the Pacific Northwest were in a position to obtain ample supplies of hemlock and white fir at a relatively low price because these were

▸ Pulpwood imports on a national basis constitute 8 percent of total consumption. In the Northeast and Lake States, imports amount to 30 and 25 percent respectively of the total pulpwood consumed.

considered to be inferior species of wood by the lumber industry. Inevitably, however, with the heavy demand for lumber and wood products of all kinds during World War II, this easy-supply situation came to an end and the area-mills found it necessary to recast their appraisal of future supplies and re-evaluate their methods of harvesting wood. As a result, there was evolved a cutting program of pre-logging, logging and re-logging which, with the utilization of species not previously considered suitable and the development of whole-log barking and hydraulic chipping,

Regional consumption of pulpwood by thousands of cords, by species, 1946, 1949, and 1952

	1946				1949				1952			
	Softwood	Hardwood	% of Total Softwood	% of Total Hardwood	Softwood	Hardwood	% of Total Softwood	% of Total Hardwood	Softwood	Hardwood	% of Total Softwood	% of Total Hardwood
	(1000 cords)				(1000 cords)				(1000 cords)			
Northeast	2918	647	84.2	15.8	2816	679	83.0	17.0	3195	852	78.9	21.1
Appalachian	582	918	38.8	61.2	682	922	42.9	57.1	746	928	44.6	55.4
South	7052	465	93.8	6.2	8753	602	94.6	5.4	12299	1110	91.7	8.3
Lake States	2051	683	80.3	19.7	1849	611	75.2	24.8	2902	923	68.4	31.6
Pacific	2781		100.0		3218		100.0		4511		100.0	
Total	15384	2433	86.3	13.7	17330	2814	86.9	13.1	22883	3813	85.6	14.4

Source: U.S. Bureau of the Census

greatly strengthened and improved the wood supply situation in the area. More recently, the pulp mills and wood-using industries of the area have furthered their efforts toward full utilization of the trees by jointly developing programs for the chipping of mill waste and converting it into pulp in an adjacent mill, or transporting to one nearby for processing. Some mills now operate entirely on mill waste, and it is estimated that 30 per cent of the regional requirements are supplied by such wood. The U.S. Forest Service has estimated that unused mill and wood residue in the Pacific Northwest is equivalent to 12,600,000 cords annually, almost three times the current pulpwood requirements

of that region. It is believed, therefore, that by 1960 the Northwest can achieve with relative ease an annual production of 5,000,000 cords, or the equivalent, of pulpwood.

The Northeast and Lake States

In the Northeast and Lake States—the oldest of our pulp and paper producing regions—both the problems and solutions are similar in nature. In these regions, spruce and fir were the original foundations of the industry and continue to play an important part as raw materials. In the Lake States, approximately 50 per cent of the wood annually consumed is of these species, half of the spruce (one-third of the total) being imported. In the Northeast, about 70 per cent of the wood consumed is spruce and fir.

In these areas the industry has recognized the importance and proportion of the problems involved in improving their supplies of wood. Thus, it is not only engaged in replanting and efforts to minimize losses from disease, insects, and fire, but has also begun to make greater use of its hardwood resources.

The northeastern states are particularly fortunate in this respect, the forest survey of 1945 showing an annual surplus growth of these species amounting to over 4,000,000 cords. To date progress—if not rapid—has been steady and, in the post-war period, annual consumption of hardwoods has risen from about 550,000 to 850,000 cords, with the result that such species now comprise more than 20 per cent of the wood consumed. The area has also increased its production of wood pulp by the processes—sulfate and semi-chemical—which are best suited for the pulping of hardwoods. Since 1946 the production of pulp by these two methods has risen from 46,000 to 300,000 tons, an increase of about 600 per cent.

The change-over to these processes may be expected to continue in the future with particular emphasis on high-yield pulping processes. Further, it is anticipated that the increased emphasis on these processes will be accompanied by a rising use of hardwoods. As a result, it is considered likely that by 1960 the production of pulpwood within the area may rise to 4,000,000 cords.

It is expected that in the Appalachian area—the only one wherein the consumption of hardwood species represents more than 50 per cent of the total quantity consumed—industry growth will continue to be moderate, and that by 1960 the production of pulpwood will approximate 2,000,000 cords.

Lake States imports

In the Lake States the pulp and paper industry has long received substantial imports of pulpwood from Canada to maintain its operation, and in recent years obtained a small part of its requirements from the Rocky Mountain states. While the relatively high yield from the western wood is an offsetting factor to the high cost of transportation, it would clearly be to the industry's advantage if the resources of the region could be expanded by increased growth or better utilization of the available species.

Although well-organized replanting programs are being implemented and present plans stipulate the planting of 50,000,000 trees (50,000 acres) over the period of the next 10 years, efforts in this as well as other directions must be accelerated if future requirements are to be assured.

Since the opportunities for the utilization of mill waste are limited in this area, and reforestation programs are of necessity long-term projects, the mills may be expected to continue their shift to high-yield pulps, whenever feasible, and thus minimize their wood requirements. However, the major part of any real increase in the supply of wood must come chiefly from increased use of poplar and other species not now fully utilized. After being by-passed as an unusable species for many years, the value of poplar began to be appreciated about 1940. Since that time consumption within the area has risen from about 175,000 to over 800,000 cords. Although the rapid increase in consumption of this species appears for the moment to have leveled off, there is no doubt that greater utilization will occur in the future. The supply of poplar is excellent, the allowable annual drain being estimated in 1945 to be over 2,000,000 cords. Annual drain was then estimated at 733,000 cords and is now believed to be slightly less than a million cords.

In recent years, mills in the Lake States have in several instances adapted part of their operations to high-yield pulping processes, and the area as a whole has made marked progress in its efforts to make maximum use of the hardwoods. It is expected that these trends will continue in the future and that by 1960 receipts of domestic wood will have increased from their present level of about 2,500,000 to 3,000,000 cords.

Continued industry growth

On several occasions in the past, the continued growth of the industry has been open to question because of a possible shortage of raw materials. Each time, however, the technicians of the industry were able to unlock the door to new and larger resources by the introduction of wood as a raw material in the 19th century, and by learning in relatively recent years to use wood-types found in the Pacific Northwest and the South. Now, although no shortage threatens the industry, the potentially large requirements of the future necessitate continuance of the work on the part of industry to further increase its raw material base. This is being done by, whenever possible, adopting high-yield pulping processes; the increased use of hardwood species; the integration of the forest industries; and the utilization of logging and industrial waste. Although this work is in its early stages, the possibilities are exciting, and indications are that the hypothetical goal of 31 million cords set for 1960, will be achieved.

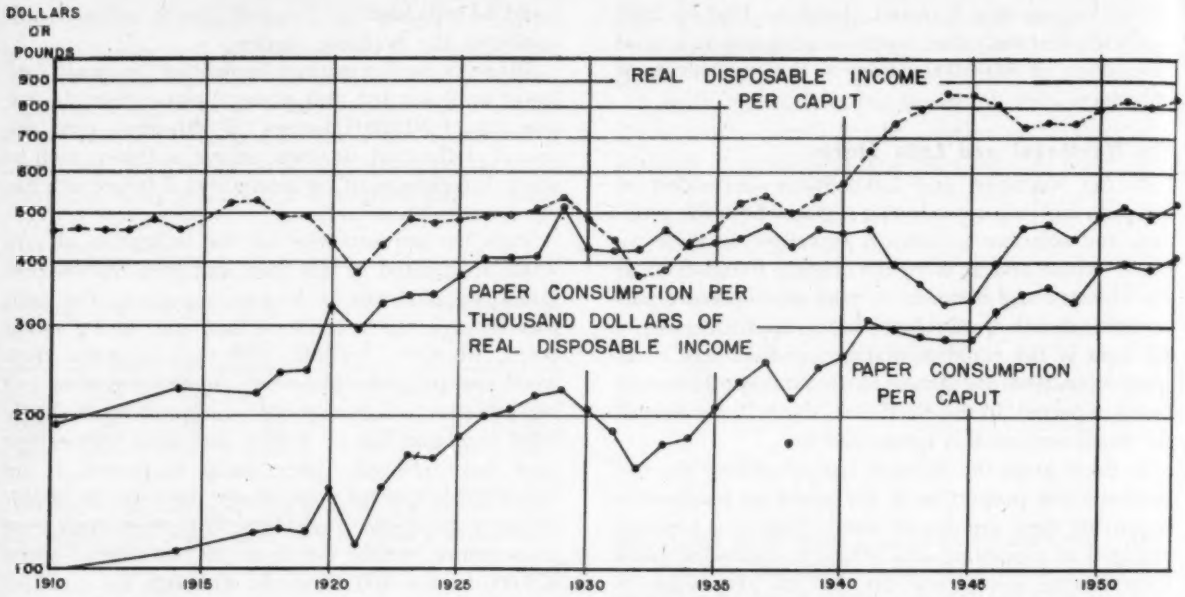


Chart 1—United States paper consumption per caput and per M dollars real disposable income: real disposable income per caput, 1909-1953, based on Department of Commerce data

The American paper market

CHARLES W. BOYCE
Industrial Consultant in Pulp and Paper

▶ **Evaluation of the paper market means evaluation of opportunities created by paper manufacturers and merchants. A market is a contrived system—it exists by creation only.**

▶ **All uses of paper products comprise a stability ranking just below that of food. Normal production swings, from the high of peak prosperity to the low of moderate recession, should not exceed 15 per cent in products of such stability.**

SUPPLIERS OF THE AMERICAN paper market have never had it so good for so long. For over a decade use of paper has been expanding, and required volumes of domestic production and of imports have grown. The nine-month record of 1953 gives every indication that gross consumption will be near, if not above, the all-time record. Employment and wages are higher than ever before and profits, despite terrific tax drains, are reasonably satisfactory.

Congenital optimists may well revel in this lushness. Equally congenital pessimists pry among the strata of the economy and find little to support the unfortunate attitudes to which they were born. Argument has descended to little things—and to the future.

The oracle of Washington's Commerce building notes in nicely phrased *pronuncios* the extravagant events of the present and prophesizes continuation of strong business activity for the next six months, a not too hazardous reading of the tea leaves. What follows has not yet been detailed in statistically buttressed prose. But it has been implied: nothing except war can stop the American people from reaching farther and farther toward a millenium even more remarkable

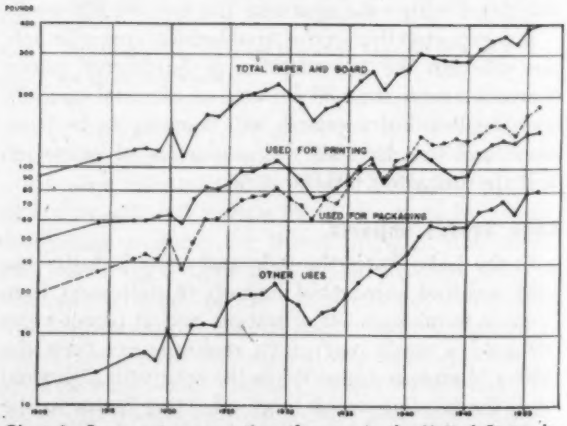


Chart 2—Per caput consumption of paper in the United States by major use classifications, 1909-1953, based on retabulation of Department of Commerce data

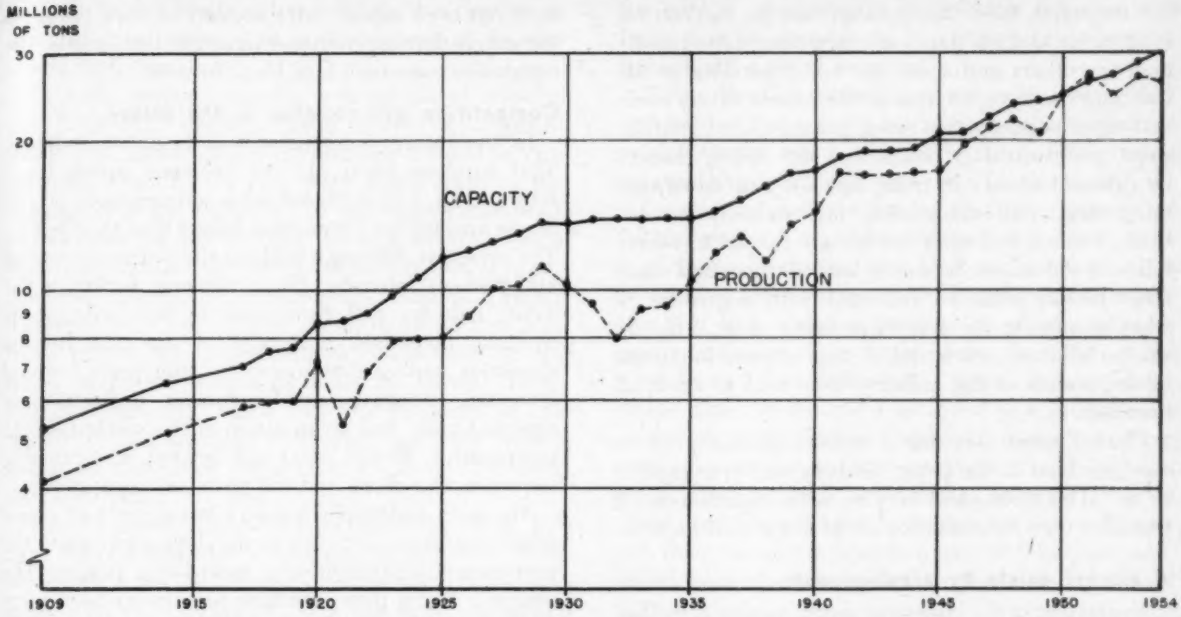


Chart 3—United States papermaking capacity and paper production, 1909-1954; 1909-1952 data based on census records, 1953 and 1954 data estimated

than the current three hundred and fifty billion dollar output.

This is the long-haul view. The immediate glimpse is not reported with complete unanimity. The prophets of gloom believe they have discovered recent evidences of recession.

There has been, however, no mass movement toward selling the American economy short. Until that happens in some degree there is no point in disbelieving Louis T. Stevenson's reasonably conservative summary of 1954 production prospects: 26 million tons in 1954 against 26.6 million in 1953 and 25.3 million in 1951. A reasonable plus or minus of Stevenson's figure a year hence continues the glorification of paper and profit to those who fortunately have a piece of the industry.

Paper's position generally strong

There is no need in this yarn to quarrel with the soothsaying of official or secular economists. For it matters little in the long run when gross national product hits four hundred billion dollars so long as its general direction is upward. It makes the same little difference when gross paper consumption reaches 40,000,000 tons so long as paper's position in the economy improves.

That these criteria have been met is evident in Chart I, in which real disposable income, a measure of the economy, and over-all paper consumption are shown for a substantial stretch of years on a per caput basis. These data are plotted on a ratio scale to permit comparison of rates of increase, the comparative upward tilt of the trend lines. This comparison is further illustrated, in the same chart, by the trend of paper consumption per $1,000 of real disposable income.

These sweeping comparisons are reasonably satisfactory on an over-all basis; per caput use of paper is lifting upward more rapidly than per caput increment in individual income. This is more than most other basic industries can show.

▶ Note some warning signals. The industry's maxim, "Paper is the world's greatest substitute material; and paper has no substitute" is no longer strictly true. Inter-industry competition may be expected.

▶ But prospects are not bleak. Paper's general position in the national market is strong. Capacity production is realizable provided more effort is put into developing the market and merchandising the product.

But when the relations over the whole period are studied, and the same presentations by kinds of paper are outlined, evidences creep in which are not wholly encouraging. Printing and writing papers are not keeping up with the economy, and packaging papers are still expanding more rapidly than the economy but at decreasing rates. Only construction, sanitary and industrial papers show no diminution in rates of increase.

These long-term records are shown in Chart II on a per caput basis. No averaging trend lines are needed to show directional movements.

Interpreted, these things mean that the markets for some major kinds of paper are expanding more rapidly than for others and some are not expanding at all. Carrying the interpretation further, these things mean that capacity-production ratios, price-demand relationships, grade shifting, production and selling chances by different classes of mills, upward and downward integration, mill efficiencies, inter-industry competition, and a lot of other matters are subject to widely different influences. Sooner or later all these and many other factors must be reckoned with regardless of what happens to the over-all economy. And, if history can be believed, when and as they become important in one branch of the industry, they tend to affect all branches.

Clark Everest says this in secular idiom: "There is only one boat in the paper industry and everybody is in it." This metaphor bristles with significance. It furnishes texts for exaltation of the Great God Papyrus.

A market exists by creation only

Evaluation of the American paper market is evaluation of the opportunities which those who make and sell paper may create for paper. For a market is a contrived affair, existent not by sovereign right or by gratuitous demand, but by creation.

It can be believed that in the American economic development, certainly still in lively progress, communication will continue to use printed words, things must be packaged, structures will be built, and people will seek cleanliness. These and other services, for which paper may be used, form the media in which the paper industry may work. What the industry accomplishes is the measure of realization. The paper market is, then, what those who supply it make of it.

In the lush run of the immediate past competition has been gentle. In this favorable climate the industry, in the fashion of its grade classifications and in the natures of each company's circumstances and inclinations, has busied itself adding capacity, improving operations and processes, shifting grades here and there and generally preparing itself for greater service to mankind and for better profit chances for itself.

Money has been spent in G times G denominations. But because of the substantial accumulations of unexpended depreciation funds at the end of the war, reasonable tolerance of stockholders in the distribution of earned profits, and the beneficence of the government regarding quick tax write-offs, the primary industry has been able to do what it has been doing without creating excessive future charges for capital services.

This is to the good and, more fortunately, it is to the better between mills of similar classifications, for the processes have tended to bring such mills to a more equal depreciated capital basis and, consequently, to a better common level of efficiency. To the extent that expenditures provide operating efficiencies close to present technological limits for materials and facilities, the industry is stronger. To the extent that facilities have not been raised to the vicinity of such limits, to the extent that expenditures have not been made, the companies concerned face bleak futures.

Competition will roughen in the future

In the future competition will begin to roughen. That happens when (1) the economy squats for a future jump, (2) drifts sideways long enough, or (3) moves upward for a somewhat longer time than in (2). The principal difference in these alternatives is timing, and perhaps intensity. For a dynamic nation, a dynamic industry will from time to time exhaust its dynamic potentials. Statement of the case by the classicists implies that sooner or later costs born of invention, processing and equipment, exploration of new materials, and organization of the whole become comparative. At that point and beyond, in inexorable sequence, the sheep and the goats are separated.

The pulp and paper industry has never had a real good separation, not even in the depression when the processes of separation were exceedingly rugged. The reason is that a paper machine has always been more immune to economic mortality than most things made by man. Up to now a manufacturer has been able to keep a grasp on marginality by shifting grades to higher values. A surprising tonnage of paper has been produced under the tenets of this policy.

It is more likely now than at any time in the past that the company which still adheres to these policies is living on borrowed time. For among other things, (1) quality of production on modern or modernized machines can reach surprisingly high levels, (2) use of new high-yield pulps is growing in volume and quality, (3) increase in the volume of output of quality, specialty, and high price grades is surprisingly small, and (4) the financial and technological strength of the companies which have done a good improving job for themselves is likely to be much greater now in comparison with marginal companies than ever before.

Capacity production is realizable

These expenditures for improvement and expansion of paper production facilities have linked the most efficient manufacturing plant in history to the greatest paper demand in history. The four-decade records of capacity and production, shown in Chart III, again on a ratio scale to preserve percentage relationships, indicate substantial narrowing of the gap between capacity and production. In the recent expansion wave the industry has maintained a reasonable balance between its view of future market opportunities and its manufacturing plant.

Reports of planned capacity expansion, including that scheduled for 1954, show a widening of the unused capacity gap. Stevenson's 1954 production forecast of 26,000,000 tons divided by the American Paper and Pulp Association's capacity figure for year-end, 1954, at 29,300,000 tons gives an expected operating rate of around 89 per cent. This is a respectable per-

centage in the family of such things, but hardly an affair of great pride at or near the crest of an economic high tide.

Capacity production as it is now calculated is realizable. The 102.8 operating ratio of 1951 is a case in point. This fact—capacity is realizable—should be emblazoned over the door of every board room in the industry. For the high level in operating ratios prior to 1940 was the 84.1 of 1920, the year when Defiance Paper Co. installed the first sectional drive on a paper machine. Thereafter, continuously improved paper machines were built which could, under proper controls, realize the mathematical product of width, speed, and basis weight for a six-day stretch. Then, manufacturers who broke with the traditions of the Northeast demonstrated that paper machines, wider and faster than ever, could make paper 335-345 days year after year.

Today's capacity allows for no feather-bedding. Today's norm of operation is substantially above the 77.95 per cent of the 1920's, and correspondingly today's break-even point is higher. And, sad to relate, under current operating conditions the industry can go broke at a much higher operating percentage than the 58.3 percentage of 1932.

Paper consumption in the U.S. is today divided 66 per cent to marketing the products of American industry and agriculture, 3 per cent to business correspondence and records, 9 per cent to building construction, 15 per cent to "culture," publications, books and communications, and 7 per cent to other uses, largely personal hygiene. Each use, in its fashion and to a high degree, is essential to life in the U.S. All uses combined comprise a stability ranking just below food and considerably above other consumable items. Barring inventory vagaries, there is no reason why the running trend of paper consumption should not be smoother than any other trend in the economy below food.

There are warning signals

In products of such inherent stability normal swings in required production should not exceed 15 per cent from the high of peak prosperity to the low of moderate recession, from a 100 per cent operating ratio to 85 per cent. In practice, as demonstrated in 1951, an extra 3 to 5 per cent can be squeezed in at the top under the urge of national emergency and rising price and, as demonstrated in 1949, a substantial part of the industry learns the difference between the supermarginal and the sub-marginal at ratios below 85.

At a point in the economy, 1953, which the oracle of Washington's Commerce building avers is under by just a little the economy's peak, paper production averages 93 per cent of capacity. Entering a year of like prospect, subject to subsequent definition of status, a bleak 89 seems probable, 4 percentage points above the theoretical expectancy for a moderately low recession.

And this occurs when 35 per cent of paper consumption is not increasing as fast as the economy, when 45 per cent is increasing at diminishing rates but still faster than the economy, and only 20 per cent is maintaining past rates of increase.

These directional trends are not to be disregarded. For back of them is the beginning of the breakdown of an industry maxim: "Paper is the world's greatest substitute material; and paper has no substitute."

Calculations indicate that the tonnage of paper used for text purposes in publications is now just little more than it was before the war. The greater consumption of printing papers rests upon advertising, a competitive field of no mean dimensions, in which non-paper media have already grabbed off nearly a fifth of the total seven billion-dollar take. Again, acetates, cellophane, film, plastics and a swarm of new products are appearing in the unit-package field. Every year these things replace larger tonnages of paper—although not yet in large but still in significant volumes. In other areas products are being developed which will enter into inter-industry competition with cellulose and associated fiber, the papermaker's inheritance from Ts'ai Lun.

But prospects are not bleak

And yet these happenings on the consumption side do not add up to a bleak prospect. They do not deny further expansion of paper uses; nor do they deny the possibilities of product research all along the line, of treading familiar ground in alien markets, or of reaching down to what George Olmstead cited in an industry address as the industry's least advanced level of operation—merchandising—and hauling it up to appropriate elevations.

Certainly neither paper nor pulp have lost their abilities to contribute to the dynamics of civilization. But, it is becoming more evident as time passes, these abilities are not heaven-given. They must be cultivated, and by much more intensive means than ever before. And that cultivation involves more and more a head-on plunge into seas of competition.

And so the tangling mass of trends into the future takes on meaning. The paper market depends upon the industry's ability to condition its capacity-expansion propensities by its market opportunities within the close tolerances which now appear to be possible in the product.

In terms of competition, this means adding a greater measure of inter-industry competition to meet the inroads of other products and services, to consolidate gains along all well-known avenues, and to explore the possibilities of service along strange avenues. A vigorous intra-industry competition is implicit in such a program.

These are conclusions which have already been reached in many industries. They are being forced in turn upon every other industry.

Today's records, confidential and otherwise, swell with production and operating statistics, technology, and the like. They are lean in economic interpretations of these subjects, especially on the consumption side.

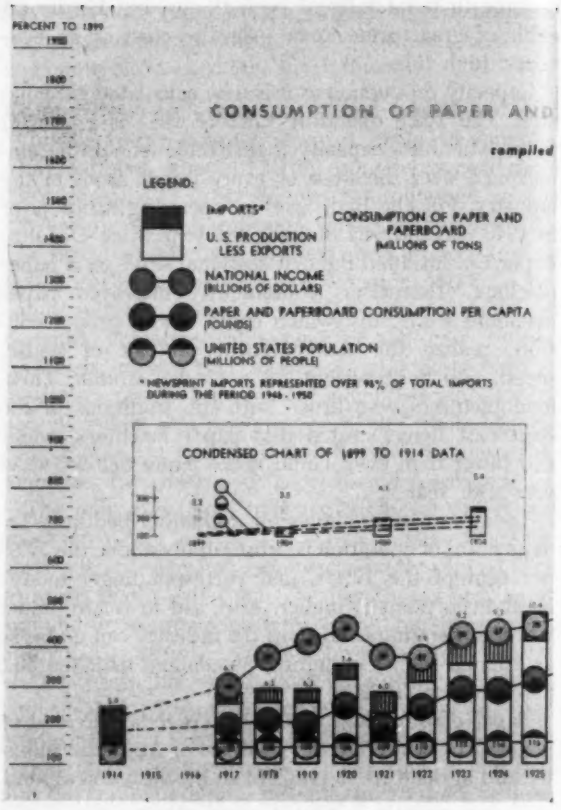
Merchandising trends in the pulp and paper industry

D. C. EVEREST
Chairman of the Board, Marathon Corp.

▶ Stepped-up advertising—especially direct sales appeal and direct mail advertising—and congressional elections are two new factors that will contribute to increased 1954 paper consumption estimated at 34,000,000 tons.

▶ Trend is toward complete integration "From tree to trade," and the making of longer-term contracts with the suppliers of pulp, paper and paper board—with prices being subject to adjustment by mutual consent.

▶ While exports may decline, due to generally improved industrial activity in other countries, any export losses are likely to be balanced by increased demands on the home market.


PERCENT TO 1899
CONSUMPTION OF PAPER AND
compiled
LEGEND:
IMPORTS*
U. S. PRODUCTION LESS EXPORTS
CONSUMPTION OF PAPER AND PAPERBOARD (MILLIONS OF TONS)
NATIONAL INCOME (BILLIONS OF DOLLARS)
PAPER AND PAPERBOARD CONSUMPTION PER CAPITA (POUNDS)
UNITED STATES POPULATION (MILLIONS OF PEOPLE)
* NEWSPRINT IMPORTS REPRESENTED OVER 90% OF TOTAL IMPORTS DURING THE PERIOD 1946-1950
CONDENSED CHART OF 1899 TO 1914 DATA
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925

WHEN ONE UNDERTAKES to make an appraisal of the trend in consumption of pulp, paper and paperboard within the United States, it seems sensible to review a period of at least 20 years in order to get the real trend in consumption of these products, rather than to merely survey the rate of consumption for any one year.

Since 1932, which was the lowest rate of consumption for eight years prior to that time, the trend in consumption has been on the ascendency except for the years 1938, 1949, 1952, and the five years from 1941 to 1945, inclusive, during which time the distribution of pulp, paper and paperboard was under government control. In 1932 the total consumption of paper and paperboard was 9,700,000 tons. The consumption of pulp of all kinds and other fibrous materials paralleled the trend in the consumption of paper and paperboard.

In 1938 there was a distinct falling-off from the previous year as consumption dropped from 16,000,000 tons in 1937 to 13,500,000 tons in 1938.

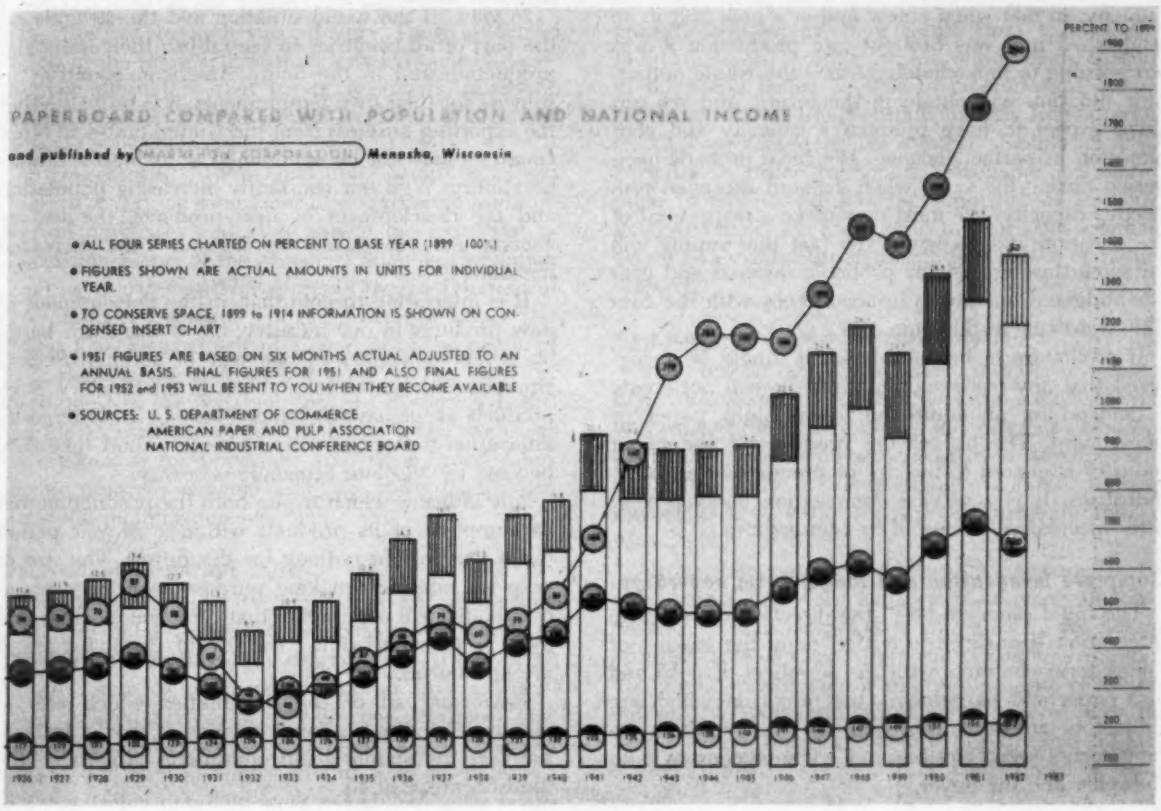
In 1939, consumption nearly equalled the previous record of 1937 and in 1940 exceeded it due to the rise in business, much of which was accounted for by increased exports of materiel and supplies to the war-torn countries of Europe. Consumption in 1941 reached 20,400,000 tons, an all-time record. With the entrance of the United States into World War II in December, 1941, under government controls the average consumption for four consecutive years was 19,500,000 tons.

Immediately after the cessation of the war, the 1946 consumption jumped to 22,500,000 tons and, with the exception of 1949 and 1952, the trend has been steadily upward. The all-time record of consumption was reached in 1951, when 31,900,000 tons were consumed.

The consumption per capita has pretty much paralleled the over-all consumption, but the population has increased from 124,000,000 in 1932 to something over 160,000,000 at the present time. Estimates based on the most dependable sources as to consumption for the current year indicate that the total over-all consumption will be in excess of 32,000,000 tons, with a per capita consumption of approximately 400 pounds of paper and paperboard.

1953 and 1954—record years

The current year's business was slow in starting. But—as the business increased, particularly in paperboard—it was evident to anyone who had followed production reports as issued by the trade associations and the Department of Commerce, plus the reports of imports, that 1953 would be the record consumption year, despite any accumulation of inventories.


PAPERBOARD COMPARED WITH POPULATION AND NATIONAL INCOME
and published by
Menasha, Wisconsin
• ALL FOUR SERIES CHARTED ON PERCENT TO BASE YEAR (1899 100%)
• FIGURES SHOWN ARE ACTUAL AMOUNTS IN UNITS FOR INDIVIDUAL YEAR.
• TO CONSERVE SPACE, 1899 to 1914 INFORMATION IS SHOWN ON CONDENSED INSERT CHART
• 1951 FIGURES ARE BASED ON SIX MONTHS ACTUAL ADJUSTED TO AN ANNUAL BASIS. FINAL FIGURES FOR 1951 AND ALSO FINAL FIGURES FOR 1952 and 1953 WILL BE SENT TO YOU WHEN THEY BECOME AVAILABLE
• SOURCES: U. S. DEPARTMENT OF COMMERCE
AMERICAN PAPER AND PULP ASSOCIATION
NATIONAL INDUSTRIAL CONFERENCE BOARD
PERCENT TO 1899

Forecasting 1954, in view of all the gloomy predictions put out by various "weekly services" and the comments of numerous economists on the staffs of financial publications and newspapers, is perhaps a risky business; but, based on such experience as we have had over the past 20 years and more, it is only reasonable to suppose that total consumption of paper and paperboard will run in excess of the estimate for 1953, and I would expect that we will consume between 33,600,000 and 34,000,000 tons in 1954. This is based on the same grades as reported in the past to the Department of Commerce, Bureau of the Census, which includes hardboard, insulating board, roofing and other boards and papers used in the building industry.

To arrive at total consumption we must add the importations, particularly newsprint, which will probably amount to at least 5,600,000 tons this year and probably a greater tonnage in 1954.

Increased advertising budgets in 1954

There are two factors in 1954 which have not affected 1953 to any more than a normal extent. Advertising budgets will be increased in 1954 and, of course, much of this will be expended on radio and television, but in a highly competitive market there is bound to be an increase in newspaper and magazine advertising. There may be less institutional advertising, but this will be displaced by direct sales appeal advertising. Direct mail advertising will also show an increase as it always does in a competitive market.

I believe we all recognize that productive capacity has been built up to an enormous extent in all industry. The pulp and paper industry is no exception.

The second factor which will affect consumption of paper is that 1954 will be a Congressional election year. In the past, congressional and presidential election years have created a greater demand for printing papers of all types from newsprint to the finest grades of book and writing.

With the present productive capacity there is no question about competition in 1954 and if competition is still the "life of trade" no industry in the country will get a better percentage of operating time than the paper industry.

Temporary below-capacity production

There has been considerable discussion relative to possible over-expansion in the pulp and paper industry, and we may find that several divisions in the industry cannot expect to operate at or near 100 per cent of productive capacity. Prior to the war years, if the several divisions of the industry were able to operate at 85 to 90 per cent of productive capacity it was deemed to be a mighty good operating rate.

During the past 10 years or more, the installation of new economic operating units in pulp mills, also paper and paperboard mills, have been of much larger

capacity, so that when a new mill or a new unit in an established mill was brought into production it was not possible to immediately absorb the whole output. This situation will obtain in the future, and we can never expect to have productive capacity and consumption in perfect balance. We have perhaps been misled during the years when demand exceeded productive capacity. We must now make a reappraisal of the situation and recognize the fact that supply will for some time exceed the probable demand and gear our budgeted operations in accordance with the conditions existing at this time.

If profits are to be considered, it should be recognized that any price war indulged in will not create a demand for an additional ton of pulp, paper or paperboard. The use of the products of the paper industry is geared to the use of products of all other industries. It is a service organization and has very little speculative buying of its commodities.

Complete integration and longer-term contracts

The trend seems to be in the direction of complete integration "from tree to trade," or in the making of longer-term contracts with the suppliers of pulp and also paper and paperboard, the prices on which are subject to adjustment by mutual consent. Such arrangements seem sensible and advantageous to both the seller and the buyer.

In view of the world situation and the struggle on the part of all countries to reestablish their industrial production and in the South American countries to provide for their own requirements, it is probable that the exporting business from the United States to other countries may not be maintained at as high a rate as heretofore. With our constantly increasing population and the development of new products, the loss of exports may be taken up by our own increased demand.

It is interesting to note that, in the development of new products in our industry, all of these are based on economic savings in one way or another. Such a situation augurs well for stability in the industry. Such products as we have developed may be considered an innovation today, but within a mighty short time they become an absolute economic necessity.

Any industry which triples both the production and consumption of its products within a 20-year period has a very bright outlook for the future. The use of pulp for non-papermaking purposes continues to increase and will continue in that direction as more and more products requiring the use of dissolving pulps are introduced.

Reviewing all of the possibilities which are all closely related to economic savings, it would seem to me that the stability and continuing growth of the industry are assured.

Distribution of pulp, paper, board and products in the nation's industrial and business economy

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Deputy Assistant Director, Pulp, Paper, and Paperboard
Forest Products Division, Department of Commerce

WALLACE H. PEDERSON
Industrial Specialist
Forest Products Division, Department of Commerce

DO YOU KNOW THAT when motor vehicles are sold to final consumers, the direct and indirect requirement for primary paper and paperboard is nearly 15 times greater than the actual direct purchases of paper and paperboard by the manufacturers of motor vehicles themselves?

W. LeRoy Neubrech

Even though the motor vehicle industry purchased directly only $4,000,000 of primary paper and paperboard in 1947, when motor vehicles were sold to final demand, the aggregate of manufacturing processes affecting other industries accounted directly or indirectly for about $62,000,000 of primary paper or paperboard.

The bakery products industry does not directly purchase wood pulp. However, do you know that in 1947 sales to final demand of the bakery products industry accounted directly and indirectly for $29,000,000 of pulp production?

Many other pertinent observations on the distribution of pulp, paper, board and products in the nation's industrial and business economy can be made, based upon a relatively new development in statistical data collection and analysis, generally known as "input-output" data or as "interindustry relations." These data have many important applications in the fields of production, distribution, and marketing research.

The input-output statistics are of particular value in appraising the marketing possibilities for those industries which primarily service or supply other indus-

Based upon statistics and analytical material prepared by the Division of Interindustry Statistics, Bureau of Labor Statistics, Department of Labor; including "Marketing Uses of Input-Output Data," printed in *The Journal of Marketing*—July 1, 1952. The full article appears in the December, 1953, *"Pulp, Paper and Board—Industry Report"* prepared by the Pulp, Paper and Paperboard Sub-division, Forest Products Division, Business and Defense Services Administration, U. S. Dept. of Commerce.

tries. The pulp, paper, board, and converted products industries fall largely in this category. Those industries which in the main sell finished goods directly to end-product consumers—that is, to consumers, investors, the government, foreign buyers—will find it of minor help for marketing research.

A prerequisite is the collection, in an organized form, of a very large amount of quantitative information on purchases and sales among the industrial or processing sectors of the economy. Such a compilation covering the year 1947 was made by the Division of Inter-industry Economics of the Bureau of Labor Statistics, U.S. Department of Labor. It is the result of work done in the past several years by the B.L.S. at the request of the National Security Resources Board and the Department of the Air Force.* The work was undertaken as an important step in a broad inter-agency program directed primarily toward improved industrial mobilization planning.

Over-all input-output data

For the purpose of this extensive and exhaustive study, the total United States economy was divided into some 200 sectors, each representing an important industry, activity, or purchasing group. For each sector, a detailed analysis of specific purchases from, and sales to, the other sectors was made. These analyses were based both on published and supplementary directly collected data and were reconciled to the available national production records, more particularly the latest Census of Manufactures for 1947. The complete study is probably the most detailed and accurate cross-sectional picture of a working modern industrial economy ever assembled.

▶ Here is a digest of an inter-industry relations report showing a most detailed and accurate cross-sectional picture of a working industrial economy ever assembled.

The esential notion in the use of input-output analysis is that, while the *pattern of shipments* from one sector to others may change quite significantly from year to year as the requirments placed on the economic system by end-product consumers vary, the *pattern of inputs* into any given sector tends to be more stable and more predictable. A going establishment in a given industry normally represents a collection of machinery and equipment adapted to processing certain materials, and a collection of persons (both in labor and management) skilled in handling, using, and transforming these same materials. Hence, abrupt and capricious changes in input patterns are unusual, even where the firm's customers change; and where they result from technological innovations or for other causes, one is likely to know of them and hence be able to take account of their probable effects. Input-output analysis thus attempts to take advantage of the typical stability of input patterns in order to obtain reasonable answers to many complex and difficult problems of economic analysis. One of the many areas to which this approach promises to contribute significantly is that of marketing research.

Applications in marketing analysis

Input-output tabulations have a number of implications for marketing analysis. Since the statistical work was carried through carefully and in great detail and the results have been reconciled to a great extent with the entire body of the national economic statistics, the results as they stand have considerable informative value.

To assist executives and research personnel in the pulp, paper, and board industry in analyzing the comprehensive input-output data compiled by the Bureau of Labor Statistics, a realignment of the figures applying to pulp, paper, board, and products into composite and useable tabulation form has been prepared by the Pulp, Paper and Paperboard Sub-division of the Forest Products Division, U. S. Department of Commerce.

▶ Primary paper and board industry uses 82.5 per cent of total pulp supply; synthetic fibers uses 7 per cent; exports—2 per cent; industrial organic chemicals—1.4 per cent; plastics—1.3 per cent, etc.

The Table* containing these data is divided into five main columns, designated as Column A, B, C, D, and E.

Column A shows the direct distribution of total supply (domestic production plus imports and inventory depletion), in terms of millions of dollars, of pulp, primary paper and board, and paper and board products, to a long list of purchasing industries as well as the direct distribution to final demand, such as export and the Government.

Column B shows the same relative information except in terms of dollar purchases of pulp, paper and board, or products by other industries required for each million dollars of output of the other industries.

Direct wood pulp distribution

As would be expected, by far the largest direct purchaser of pulp mill products is the primary paper and board industry (Sector No. 45), buying 82.5 per

*The initial phase of the 1947 inter-industry relations study was financed by the NSRB. Most of the later support was provided by the Department of the Air Force. Due to budgetary considerations, the latter agency has withdrawn its support of inter-industry research and, consequently, the program is now being liquidated.

*The comprehensive statistical Table referred to (including references and sector numbers) is contained in the Industry Report available, upon request, from the Forest Products Division.

cent of the total supply. Following in order of importance are synthetic fibers (No. 52), using 7 per cent; exports (No. 225), nearly 2 per cent; industrial organic chemical (No. 49), 1.4 per cent; plastics (No. 50), 1.3 per cent; with the balance distributed to about a dozen other groups. It should be noted that the total supply of products of the pulp mills includes not only wood pulp but also secondary by-products such as tall oil and turpentine. Furthermore, the total "supply" of pulp mill products as indicated previously, consists of production plus imports plus any withdrawals from inventory. On the other hand, exports and inventory additions are distribution outlets comparable to industrial buyers and government.

For every million dollars of output of paper and board mills, Column B discloses, $353,321 of pulp mill products are required. For every million dollars of synthetic fiber production, $117,123 of pulp mill products are used; in similar comparison, plastic materials require $25,793 of pulp; and even for medical and dental instruments and supplies (Sector No. 155) $8,399 of pulp mill products are utilized. Knowledge of the industry makes it possible to identify this as pulp for medical supplies used largely in sanitary napkins and surgical dressings.

Direct paper and board distribution

The direct distribution of primary paper and board shows that paper and board converting industries (Sector No. 46) use about 46 per cent of the total output; that printing and publishing (No. 47) uses about 29 per cent; while the balance of 25 per cent goes in varying percentages to a very wide range of other industries. These other industries, nevertheless, are truly important factors in the aggregate as markets for primary paper and board. For example, the concrete and plaster products industry (No. 74) purchases $30,000,000 of paper and board, while banking, finance, and insurance (No. 181) purchase $27,000,000. Retail trade (No. 177), as a service industry, purchased $103,000,000 of paper and board as a medium for handling retail transactions, even though many products go to retailers already packaged.

Converted products distribution

The direct distribution of converted paper and board products discloses an even wider range of purchasing groups than in either the case of wood pulp or primary paper and board. For the first time, households (Sector No. 200) enter the picture of direct purchases of the industry, amounting to 10.5 per cent of the total value of converted products. Obviously, households (individual people or families) do not buy wood pulp or primary paper or board. But they do buy such items as household rolls of toilet tissue, paper towels, stationery, facial tissue, paper napkins, and similar products.

Two other important direct purchasers for converted products are wholesale (No. 176) and retail (No. 177) trade, taking 8 per cent and 11 per cent, respectively, of the total output of the industry. It must be kept in mind that the converted paper and board products industries encompass all types of items (except printing and publishing), such as bags, shipping sacks, folding and set-up boxes, fiber shipping containers, waxed papers, as well as such types as sanitary paper products, stationery, envelopes, waterproof papers, etc. As was the case in primary paper and board, wholesale and retail establishments purchase important quantities of converted products for their own needs in merchandizing. In this connection, it is apparent that wholesalers and retailers require bags and boxes for the handling and delivery of merchandise. The operation of a retail grocery or department store would be good examples of the utilization of boxes and bags in handling transactions. It must be recalled, however, that when the wholesaler or retailer sells such items as drugs, breakfast cereals, frozen foods, cigarettes, and the hundreds of other products which are packaged at the primary manufacturing plant, the direct sales of such packaging material are credited to these various primary manufacturers and not to the wholesaler or retailer.

▶ Paper and board converting industries use 46 per cent of total paper and board output; printing and publishing uses 29 per cent.

▶ Households use 10.5 percent of the converted products; wholesale trades—8 per cent; retail trades—11 per cent; publishing and printing—5.2 per cent; bakery products—3.8 per cent; medical—1.2 per cent; etc.

Other major industry group buyers of converted products are printing and publishing (No. 45), 5.2 per cent; bakery products (No. 25), 3.8 per cent; medical and dental instruments and supplies (No. 155), 1.2 per cent; eating and drinking places (No. 180), 1.8 per cent, and laundries and dry cleaning (No. 184), 1.4 per cent. The export market (No. 225) accounts for about $67,000,000, or 1.9 per cent of the total distribution of converted products supply.

In terms of dollars of converted paper and board products purchased per million dollars of output of other industry groups, it is particularly significant to find that medical and dental supplies use $102,908 of paper products; toys and sporting goods (No. 159), $38,434; soap and related products (No. 55), $42,775; glass (No. 70), $58,409; cement (No. 71), $65,058, and cutlery (No. 94), $41,757. These figures indicate that paper products, particularly bags, boxes, and envelopes, account for from about 4 to 10 per cent of the final value of output of such other products.

Final demand factors

Final demand purchases refer to the sale of commodities to ultimate consumers, such as households, the federal government, state or local governments, and exports. Additions to inventories are also classified as final demand. There are many industries which produce predominantly consumer goods, such as automobiles, furniture, processed food products, apparel, etc., while other industries (such as converted paper products) sell a moderate portion of their production directly to final demand, other industries (such as wood pulp) sell little or nothing to consumers.

Input-output statistics provide a basis for determining how much of the production of a sector which sells to other processing industries is related in the final analysis to demand by consumers, government, investors, and foreign buyers for particular classes of finished goods. This relationship is an extremely important one.

To give an example, the consumer will buy and wear a garment. He will use this garment without further processing and without any intention of handing it on for resale. In supplying the consumer with the garment, the clothing wholesalers and retailers use paper, paperboard, boxes, bags, and other materials in their merchandising operations. The apparel industry will purchase textiles, paper and paperboard, boxes for packaging, and other materials, such as

▶ Six steps are listed to permit the use of these report-data as a basis for projecting future markets.

buttons, thread, metal fasteners, etc. The textile industry in turn may purchase cotton, rayon, or other fibers which are also frequently packaged in paper or paperboard. The rayon itself was largely made from wood pulp. But these latter purchases are engaged in only to satisfy the consumer with a garment, and in making them the wholesaler, retailer, and the garment and textile industries effectively act as agents for the consumer. Therefore, although the consumer himself is interested only in the purchase of a garment, his effective desire for apparel may be regarded as the driving force behind at least some production of wood pulp, paper, paperboard, boxes, cotton, etc. It is in establishing the remote demand inter-connections of this type that the inter-industry relations approach makes its contribution to marketing research.

As pointed out previously, a distinguishing feature of primary paper and paperboard, as well as the major tonnage output of converted products, is that such a large proportion goes to other processing sectors and so little to final demand. Effectively, the primary paper and paperboard industry has almost no final consumers in the United States who wish to use its product in the form it leaves the mill. The only really significant final demand entries are for exports of paper and paperboard and government purchases. Furthermore, only 14 per cent of the total volume of all types of converted paper and board products is purchased by final consumers who wish to use the item as such.

Final demand relationship to pulp, paper, board, and products

Column C of the Table shows for each million dollars of domestic output of processing industries going directly to final demand the direct and indirect dollar requirements of pulp, paper, board, and products. These data serve as the basis for computations of the total direct and indirect requirements of pulp, paper and board, and products, purchased by other industries whose products go direct to final demand, as shown in Column E. The multiplication factors, namely the total domestic output of manufacturing industries going directly to final demand, are shown in Column D.

To follow this procedure, let us take the apparel industry (Sector No. 34) as a specific example. Column C shows that for every million dollars of the product going directly to final demand, the apparel industry required directly and indirectly $7,773 of wood pulp, $8,937 of primary paper and board, and $13,264 of paper and board products. Next, Column D shows that the total sales of apparel going to final demand was $9,484,000,000. Multiplying $9,484 by the $7,773 of wood pulp required per million dollars results in disclosing that $74,000,000 of wood pulp was necessary to consummate the production and sale of apparel to final demand. In similar comparison, $85,000,000 of paper and board and $127,000,000 of paper and board products are used directly and indirectly in the manufacturing processes and distribution of apparel to final consumers.

The significance of the final demand effects upon the pulp, paper, board and products industries is clearly demonstrated in this example of apparel. The following tabulation shows that the apparel industry does not buy any pulp or paper and board directly from pulp, paper and board manufacturers. However, the final demand for apparel causes the chain reaction previously described, whereby wholesalers, retailers, textile mills, rayon plants, manufacturers of such items

(*Continued on page* 1011)

Effect of final demands for products of certain industries on requirements for pulp, paper and board and converted products (Millions of Dollars)

Sector Number	Industry	Pulp Mills	Paper and Board Mills	Converted Product Mfgs.
34.	Apparel Industry			
	Direct Purchases	....	....	76.7
	Direct and Indirect Requirements to Meet Final Demand	73.7	84.8	199.7
52.	Synthetic Fiber Industry			
	Direct Purchases	86.1	....	4.9
	Direct and Indirect Requirements to Meet Final Demand	2.4	8.1	8.2
145.	Motor Vehicles Industry			
	Direct Purchases	....	4.2	27.4
	Direct and Indirect Requirements to Meet Final Demands	28.2	62.9	74.1

New and improved paper products

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ONE OF THE MAIN REASONS for the regular, rapid, and long-time increase in the use of paper is its suitability for a multitude of uses. Paper is used today for hundreds of uses undreamed of a few years ago. The ingenuity displayed in conceiving these new uses is almost incredible, and there is no end in sight. Time after time, paper has been modified or combined with some other material to meet the requirements of a new use that was not thought latent in paper itself.

Other factors have, of course, influenced the growth of the paper industry. Because of higher levels of education and business activity, per capita consumption of paper has increased, even as the population was increasing. The value of paper products consumed in the United States has doubled in the past 15 years. In 1951, thirty million tons of paper and paperboard were used in the United States. Per capita consumption increased from 246 pounds per year in 1937 to 400 pounds in 1951. Certainly a large part of this increase is the result of development of new products.

Part of the reason for the large number of uses for paper is the fact that it can readily be modified by relatively simple papermaking operations. Early artisans, without benefit of scientific knowledge, could make paper that was hard or soft, porous or nonporous, dense or bulky, by simply varying the amount of mechanical action in the beater, or by changing the pressure on the wet sheets in the press.

In the early days, paper was fiber and little else. Today a new paper product that contains only fiber is the exception rather than the rule. As more and different chemicals are combined with papers, the technical problems multiply, but so do the possibilities for new uses. In recent years we have seen foils of lead, tin, and aluminum bonded to paper with asphalt, resins, or latexes; impregnants and beater additives of resins, latexes, and waxes; coatings of resins, lacquers, starch, or casein, with or without fillers of clay, minerals, or metals.

We have seen the development of pressure-sensitive tapes, toxic-coated papers for flies and insects, heat-sealing papers, duplex sheets of film and paper or cloth and paper, and many other products made by treating or combining paper with various chemicals. Today the paper industry is one of the largest markets for many products of the chemical industry.

The best hope for the continued growth and vigor of the paper industry may lie in the creation of new products and new uses. We have no crystal ball to tell us what these new products and uses will be, but we can look for trends in recent developments in the paper industry.

▸ Continued growth and vigor of the pulp and paper industry depends largely on the development of new and improved products. What are the current trends in new products and new uses of paper products?

▸ Today 8,000,000,000 milk bottles carry almost half the liquid milk sold. Supermarkets—as we know them—are impossible without new papers and paper products.

Packaging

Modern food packaging has been a great stimulant to the development of new and improved paper products. We would not have supermarkets as we know them today without new papers and paper products and their source—an adequate, relatively cheap supply of fiber.

The paper milk container is a singular example of a specialty product that rapidly became a standard item. In 1935 almost no containers of this type were used. In 1940 over a billion paper containers were used, but they carried only a small percentage of the fluid milk sold that year. Today over 8 billion are used to carry almost half the liquid milk sold. Milk containers now require over 300,000 tons of bleached pulp per year, the equivalent of about 700,000 cords of wood.

A recent report on the distribution of milk as it affects farmers, distributors, and consumers indicates

that the paper milk container is an important factor in promoting the use of whole milk. It is helping the farmer by increasing the demand for milk. It is helping the distributor by eliminating problems of reuse and breakage, by reducing weight and storage space, and by these advantages lowering the cost of milk. Consumers benefit because they pay less for milk.

One of the outstanding advantages of the paper milk container is its light weight. A filled paper package weighs less than half as much as a filled glass bottle. Many other liquids, such as fruit juices and beverages, are now distributed in paper bottles.

In the design or improvement of a paper package, the materials must be selected so as to give the required strength, stability, and certain other properties to the package. The nature of the product must be considered, as well as the adaptability of the package to production equipment for filling, weighing, and sealing; its acceptability for handling; and finally, its merchandising appeal. All of these entered into the design of the paper carton, the multiwall paper bag, the paper carrier and display rack, folding boxes of a thousand kinds, and products using common as well as glassine, parchment, creped-tissue, waxed, resin-treated, and wet-strength papers.

▸ Rust resistant paper, honeycomb, water- and vapor-resistant papers in packaging and fiberboard containers in shipping are finding an ever-widening field of application.

▸ Printing papers are constantly being improved and can now be made from hardwood pulps. Even newsprint has been made from hardwood chemigroundwood and semichemical pulps.

One of these special-purpose papers has a rust or corrosion inhibitor incorporated in it. Is is widely used in industry for packaging metal products—from small watch parts to whole aircraft and diesel engines. This paper eliminates the need for costly greasing methods, offers the product ready for use without cleaning, and reduces the cost of packaging.

An interesting new idea is the use of expanded paper honeycomb to line railroad car bottoms for carrying bagged citrus fruits. It provides both cushioning and ventilation. Paper honeycomb is also being considered for use in strong, lightweight pallets for unitized shipment.

The need for water- and vapor-resistant papers for certain military applications has led the industry to develop many new products, and more could be done along these lines. There is need, for example, for a case liner material that will be flexible at low temperatures, will function well at high temperatures, and will maintain its water-proofness. Papers coated or laminated with polyethylene or similar materials have most of the desirable characteristics. Reinforced papers or papers with a good deal of stretch may be needed to maintain strength under such adverse conditions.

Containers

The fiberboard box is slowly replacing the wooden box for shipping many commodities. Improved materials that are stronger and have more water resistance are giving impetus to this trend. The well-known V boxes developed during the war gave good service under the hazards of overseas military shipment. A more recent development is the use of paper-overlaid veneer to provide additional stiffness and rigidity.

During the past season on the West Coast, lemons, in particular, were shipped largely in fiberboard containers. There are two good reasons for this. One is the so-called half box that permits the lemons to be loosely packed in the container; another is the fact that a fungicide can be incorporated in the container to retard mold so the lemons can be shipped without refrigeration.

Fiberboard containers are especially suitable for use with the vacuum cooling process recently developed for leafy vegetables like lettuce. The vegetables can be picked, sorted, graded, packed in fibreboard boxes, and the boxes closed right in the field.

▸ Similarly wet strength papers; papers as building materials; tissues, toweling, and creped wadding are shown in many novel and entirely new applications.

▸ Papers with integral reinforcement of glass yarns and, even more so, papers made from glass, asbestos, or aluminum silicate fibers have many unique and unexcelled properties.

Paper for fiberboard boxes is constantly being improved as new pulping processes are developed. For example, the relatively new semichemical hardwood pulps have been used to make a high stiffness corrugating board. There is still a need, however, for boxes that can withstand higher compressive loads under conditions of high humidity. Some progress has been made in this direction through impregnation with sulfur, low-cost resins, and lignin. Manufactured resins, although effective, are generally too costly for extensive use for this purpose.

Printing papers

Although few printing papers would qualify as "new" products, new methods and raw materials are being used in making them. New procedures for coating on the paper machine, for example, have improved paper quality and reduced costs. Further developments along these lines look promising, and the procedures may be adapted to other products.

The use of hardwoods for printing papers has increased significantly, as it has for other grades. Hardwoods are now being used for groundwood, sulfite, and sulfate pulps, as well as the newer semichemical pulps. All of these pulps are being used in printing papers.

A start has been made on the use of hardwood chemigroundwood and semichemical pulps in newsprint. A still newer prospect is the so-called cold soda pulp. This pulp is made by steeping chips at room temperature in a solution of caustic soda, then milling them to a pulp. The yield by this process is in the same range as groundwood (88 to 92 per cent), and the pulps produced from hardwoods are at least as strong as ordinary softwood groundwood pulps. Because high temperatures or pressures are not required, this development may lead to a new, simplified, continuous pulping process.

Wet-strength papers

The number of potential uses for paper increased considerably with the development of practical methods for giving paper wet strength. While the tonnage of these products is not yet very high, it undoubtedly will increase as the public becomes better acquainted with the advantages and numerous uses of these papers.

Every day more products using wet-strength papers are appearing on the market. Among the more familiar ones are potato bags, ice bags, freezer and locker papers, toweling papers that are low in lint and can be scuffed vigorously while wet, napkins, industrial wiping papers, tag papers for laundry and cleaner marking, butcher papers, blueprint papers, and photographic papers. These special papers are also used for dental bibs; butter wrappers; twisting papers for use in cordage, fabrics, bags, and auto seat covers, and as base sheets to be impregnated with resin for plastic table and counter tops. Other uses are disposable hospital bed pads, pillow case covers, aprons, woven paper textiles, sports wear, table place mats, and tropical hats. Paper has even been used for bathing suits and summer beach wear.

For many years certain papers have been made with a degree of wet strength, sometimes a very high degree, by such techniques as mercerization, parchmentization, vulcanization, or treatment with viscose, or formaldehyde and proteins, such as glue or casein. The present interest in wet-strength papers came, however, with the use of urea and melamine resins and, more recently, synthetic latex as beater additives. These chmicals contribute wet strength when used in small quantities, but when added in larger quantities they produce plastics or leatherlike products that are not classed as wet-strength papers. These same chemicals have been used to stabilize papers dimensionally for maps and charts and to make papers flame-retardant, water-repellent, absorbent, greaseproof, printable, or paintable. A number of combinations of properties can be achieved with these wet-strengthening agents.

Tissues, toweling, and creped wadding

The increase in consumption of tissues, toweling, and creped wadding has been due not only to increased normal use but also to the discovery of a variety of new uses. Facial tissue, for example, is now used for dozens of purposes other than those for which it was developed. It is admirably suited for hospital and clinical disposables; cosmetic purposes; glass, wood, and metal cleaning and polishing, and many other uses.

Tissue papers showed the greatest rate of growth in consumption of all paper types, except construction paper and board materials, from 1940 to 1950. During this period their gain was over 50 per cent higher than the average for all papers. This is understandable when we consider the wide variety of tissues that are made—condenser, insulating, blocking, interleafing, lens, make-ready, facial, napkin, pleating, pattern, toilet, twisting, wax, wrapping, wadding, and many others.

Many of these special tissue papers are reprocessed to serve even more specialized purposes. Condenser papers, for example, are coated with an extremely thin layer of metal for forming into small capacitors for electronic circuits. The great increase in the number of telephones, radios, television sets, and electronic devices has pyramided the demand for these thin, nonporous, pinhole-free sheets made to caliper between 0.0003 and 0.0004.

Housewives have found that paper toweling can be used in any number of ways. They use it not only for drying hands, but for draining fat from fried foods, cleaning kitchen utensils, wiping up spilled liquids, polishing glassware and mirrors, wiping out sinks and bathtubs, draining water from vegetables, greasing baking pans, and wiping off stoves and other appliances. Undoubtedly specialized towels will be developed for some of these uses.

Pulps that are similar to those used for tissues and towels but less purified are made into creped wadding. In addition to its use as insulation bats, wadding is used as a cushion in packaging, to absorb liquids that might spill, and to protect the surface of the product from scratches or dents. Disposable sleeping bags are another limited use. By adding certain chemicals to the furnish it should be possible to produce wadding with special qualities.

Building materials

Hardboard production has increased tremendously in the past few years. Since 1948 the productive capacity for hardboard has doubled, and still more plants are being planned. Much of the wood used is waste or of low quality. In some of these operations continuous pulping methods are used, and mats for pressing are formed by dispersing the fibers in air

instead of water. Resin binders are often used to strengthen the product.

Recent studies have shown that most species can be processed into a suitable hardboard. Certain additives or heat-treating processes are generally needed to produce the best quality material. In the near future we may see mechanically made fibers of novel shapes and sizes combined with cheap resins or binders to produce a board that will compete with lumber for special uses.

Research has shown that papers can be resin-bonded to hardboard, veneer, plywood, and lumber to make a variety of materials. Two of the most important new materials are paper honeycomb cores and resin-treated overlay papers for veneer, plywood, lumber, and hardboard panels.

Several types of resin-bonded paper honeycomb cores have been designed to meet the structural requirements of core material for sandwich panels. In this type of construction most of the stresses are taken by the facings; however, the core may be chosen for its low thermoconductivity or high sound absorption. Sandwich panels are becoming accepted materials for wall paneling, flush doors, and many other uses.

Overlay papers impregnated with resin were developed during the war for stabilizing veneer and plywood against moisture and for certain container and building applications. Since then their properties have been improved, and they have become an important use of both resin and paper. Further research is expected to show that this material can be used to upgrade low-grade lumber and to increase the usefulness of lumber for many applications.

The use of papers and paperboards in conventional buildings has expanded more rapidly than most uses, partly because of the high demand for homes and partly because of a greater demand for insulating and vapor-resistant materials. The industry has developed several insulating products that are water resistant, sometimes creped to increase toughness, and often faced with a vapor barrier of metal foil or coated paper.

Filters

Filters do not represent a large tonnage use of wood fiber, but they are an excellent example of the ingenuity of technical people and the versatility of paper or pulp. Paper filters are widely used to filter food, petroleum, cutting oils, medicines, beer, air, and many other liquids and gases. To achieve the desired porosity, capacity, flowage, and particle removal, technicians have considered molded plugs, pleated papers, multiple-layer papers, special fiber blends, and have assembled components in many different ways. Materials to be filtered may be driven through papers in a flatwise or an edgewise manner, through multiple layers or single layers, through thin uniform widths or thick coarse mats, through the purest cellulose or a waste paper fiber mixture.

Miscellaneous

Because paper is such a versatile material, it is almost impossible to mention all of its uses or even to group all of them into orderly categories. Some of the "miscellaneous" items that offer promise are papers with an integral reinforcement of glass yarns in a unidirectional or scrim form for holding back wet concrete, rigid paper tubes that can be used in the pouring of concrete columns, paper tubes for heat channels in perimeter heating of concrete slabs, fungicide-treated papers for construction, specially treated wrappers to reduce spoilage of fruits, bags for controlling plant pollination, and papers for the germinating of seeds.

Through the use of latex as a beater additive, tough, flexible, resilient papers with high stretch have been developed. The product possibilities of these papers include artificial leathers, gaskets with improved resilience, filters, inner soles, masking tapes, backing for pressure-sensitive adhesives, backing for wet sandpaper, twisting papers, surgical sheets, backing for disposable diapers, and papers with high chemical resistance.

Few people realize that a room could be furnished almost entirely or even a very substantial house built with paper products now on the market. A complete, sturdy armchair made from cut and scored fiberboard and covered with fabric is just one example of the ingenious products that are being made from paperboards. Paper rugs, curtains, drapes, window shades, lamp shades, doilies, and wallpaper are some of the other products that could be used in an "all paper" room. Stressed skin panels with paper honeycomb core and paper covered plywood or other faces have made sturdy and durable houses without framing.

The use of inorganic fibers should be watched with considerable interest. Fibers of glass, asbestos, and aluminum silicate can yield special papers absolutely unobtainable with cellulose fibers, such as temperature resistance up to 3000° F. Glass fibers have interesting possibilities for printing papers, special filters, and papers with high dimensional stability.

Many factors will influence the future of the paper industry, but one that is within its control is the development of new or improved products or new uses for old products. The continued growth and vigor of the industry may depend largely upon developments of this kind.

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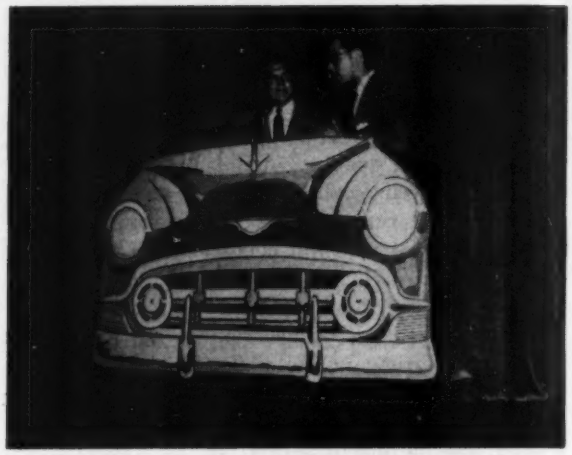
This is not a typical interview since a candidate sees only one executive at a time. It shows three key men in Scott's sales program; left to right: George Breitling, sales training director; Paul Brown, retail sales manager, and Larry Wight, sales personnel manager



The curb-stone conference is demonstrated at one of Scott's biannual retail sales meetings; above, a young salesman discusses a sales call with his trainer; doing, reviewing and doing again is one of Scott's secrets in helping men become salesmen

Scott sales department recruits and trains

Based on an exclusive release to
THE PAPER INDUSTRY

▶ What is Scott Paper doing to achieve Thomas B. McCabe's $300,000,000 goal that will double Company paper sales by 1958?

THE TREND AT SCOTT Paper Co. has been to give ever-increasing attention to the recruiting and training of its future executives. And herein lies the key to the Scott management attitude: Hire men with potential and train them to become executives.

Larry Wight, who is currently sales personnel manager, is quick to point out the necessity for a company being in a position to follow through with the reward of increasing responsibility for young men as they grow. The most important question about a job to a young college man has been found to be not "Where do I start?" but "Where do I go?" To answer this legitimate question, a business must have a well-planned program for growth. It must know where it is going, if it is to predict with any accuracy its additional executive needs in say five, 10, or 20 years.

Young men are prompt to reject a company's hollow promises if they are based on its subjective desires rather than on intelligently conceived, practical goals founded on a steady growth pattern. Young men do not expect specific promises, but they do want to hear about a planned program which could include them.

Thomas B. McCabe, president of Scott, is one of those rare businessmen, relentless in his enthusiasm for advance planning. His goal of doubling Scott paper sales by 1958 has already received wide attention in the industry. Some say it can't be done. After just one year of work toward the $300,000,000 goal, however, many are predicting this ambitious objective will be met and surpassed.

Advance planning such as this has placed Scott in an enviable position to propose, test and implement pace-setting programs in the paper industry. Its recruiting and training program is rapidly becoming a prototype.

Sales personnel procurement

As sales personnel manager, Wight has a threefold assignment: (1) Enlist the support of college and university placement officers, (2) make the company's manpower requirements known to his colleagues on the Scott sales force and his many friends in the industry, and (3) interview and screen candidates and guide the better ones through their interviews with other executives.

According to the Scott philosophy, the sales personel manager is not just a hirer of men—in the traditional concept of the recruiting function. Although Wight admits that this phase of the job gives him great pleasure, he says his major contribution comes under the heading of public relations. He adopted this view when he saw his competition—the other recruit hunters—out gunning on the campus. Wight revised the approach after discerning that the odds against an "attractive" college senior's accepting an offer of employment are about 10 to 1. Wight finds that his approach wins about 6 out of 10 offers.

Interview-appraisal of prospective sales personnel

Sales Personnel has as many as a dozen job opportunities available at one time. During the first eight months of 1953, about 65 men were added to Scott's sales force. Wight admits, however, he could have hired many more of the 1,000 who applied, if management was looking for men just to sell paper products. Faced with a $300,000,000 goal (and the job opportunities which become available as the company progresses toward that goal), Wight has instructions to be selective. Scott executives take the view that they would be doing both the man and the company a disservice to put a neophyte into the competition if there were any question whether or not he could develop to meet and fill future executive needs.

Taking the measure of a candidate might appear to be a hit or miss proposition. No formal tests are used. The company recognizes that tests might provide a

future executives*

▶ The answer lies in advanced planning that already has placed the Company in the enviable position of initiating, testing, and implementing pace-setting methods in the paper industry.

shortcut to finding your man. On the other hand, it subscribes to the view that available time should be spent in extensive interviewing. In this way, the interview-contact is made active and positive, instead of passive. Wight summarizes his confidence in interview-appraisal as follows:

1. A candidate's sales personality will be more than a comparative statistic – his appearance, his speech, his drive, in fact his entire personality can be appraised.
2. His actual reactions in different interviews can be compared. In this way his flexibility can be judged; his potential can be measured.

The company is firm in its belief that there are no short cuts in recruiting. Scott management takes the uncommon view that the recruiting function is a two-way street. "Those candidates have a right to see and measure us too," Wight says. "I can't see how they could have a good opinion of us if we shoved paper and pencil at them and stood by ominously with a stop watch—we use that time to get to know the man personally and as a friend."

After three interviews with executives, there must be complete agreement that the candidate can measure up, with training, as a potential Scott executive. One negative vote throws the man's application out. The reasoning being that every man hired should have 100 per cent management support.

New sales training program

Scott Paper Co. was over-sold on practically all products since 1941. Although shipments of cases of finished goods rose to 165 per cent during this period, the swelling demand still cannot be satisfied. These circumstances did not inspire men to sales action, since allocation provides no incentive. During 1952, however, management set its double-our-sales-in-five-years goal on the basis of market studies and Scott's reappraised production potential. Trained manpower was the variable. As a result, Scott management authorized a special, new sales training group within the Sales Personnel Department. Veteran salesman, George Breitling was appointed to direct the new function. He was charged with developing a training program to:

1. Help salesmen keep pace with accelerated production and distribution targets.
2. Relieve divisional managers and key district managers of the basic training function.
3. Assure the company a pool of trained men to assume managerial positions.
4. Give all men equal training opportunity.
5. Prepare men to handle an increasing number of products.
6. Re-educate and inspire men who might have grown lax under "allocation" selling.

While these needs might appear obvious or routine, they gave the sales training director a clear-cut direction for his efforts. The training program was logically divided into five phases, geared to accommodate both longevity of employment and job responsibility:

1. Training of newly hired men.
2. Training for men in the business about one year.
3. Special orientation for new district managers.*
4. Management orientation for district manager.
5. Management development programs for division managers.

▶ The Company's tailored-to-the-individual recruiting and training program ranks high in providing a pool of superbly trained men capable of assuming managerial responsibilities.

To carry out Phase 1, two training centers were designated, Chicago and Philadelphia. The sales force was carefully screened for potential trainers; an outstanding man was chosen, promoted and assigned to each center. These instructors are not given a sales quota. While serving as trainers, these men have the additional opportunity to broaden and develop their own leadership qualities.

*In Scott terminology, a division is the top sales group, which includes numerous districts.

Six weeks' indoctrination

New salesmen are assigned to one of the centers, the nearest to his home. The assignment is for six weeks' indoctrination. The first three days are allocated to company history, including biographical sketches of company officers, a review of company goals, company organization and policies. Too, Scott products are considered and demonstrated in detail; traffic, price and credit policies are high-lighted, as well as such routine subjects as order books, expense accounts, handling merchandise, etc.

This fast moving schedule is designed to expose the man to as much material about Scott Paper Co. as possible. The training manager admits that the men are not expected to absorb all the information. "What we're primarily interested in," he says, "is to plant some thought-starters and show these beginners how they can constructively vent their natural, new-on-the-job enthusiasm."

Training on-the-job

After this short but comprehensive introduction to the business, the new man starts training on the job with the trainer. By seeing the teacher actually sell, the tyro begins to gain confidence and is soon eager to engineer his first call. After each such call there is a curb-stone conference. Successes and shortcomings are dissected; customer objections are reviewed and answered; openings and closings are criticized. Doing, reviewing, and doing again is one of Scott's secrets in helping men become salesmen.

No man is expected to learn a pat spiel. Experience has shown that each man, carefully guided, will develop his own sales personality. To bring this about as quickly as possible, after the new man has evidenced a grasp of the fundamentals, he is assigned to work with different, experienced salesmen. After six weeks of seeing and trying different techniques in one of the sales training centers, he is considered ready for transfer to his first sales assignment. At this second step, he works as a salesman with the district manager and experienced salesmen. As quickly as he gets oriented to the new market, he is encouraged to make more and more solos.

Scott has demonstrated that aggressive salesmanship can open new markets. This lesson has served as a challenge to everyone on the selling team—especially to young men in the processes of learning. The company feels, nonetheless, it cannot afford to send untrained men into the field alone. The company fully realizes that every employee who meets the public is Scott Paper Co.

General programs to stimulate two-way communication between employees and management are emphasized to make both better citizens. It is recognized, however, that it takes more than good citizenship to qualify for promotion—a man must have a command of his present job before he can qualify to move on to a new assignment.

Orientation to management point of view

Under the new program, all new salesmen are given the most carefully planned, personal training, encouragement and counsel. Disregarding the rare exception, salesmen are promoted to a district managership within two years, but many make it after one year. It is, therefore, at the end of the first full year that advanced, phase 2, training begins. In this phase, a man is formally introduced to a management point of view. Men are brought to Chester and exposed to five days of orientation and a broader look at the company, its various departments and their functions.

During the first year a man has heard the Scott story at many meetings, study groups, as well as two sales conventions. At Chester, with six to 10 of his associates, he has a chance to summarize his information, fill in blank spots and have a close first-hand look at the men and machines working for him. The agenda includes a review of such topics as: scientific sales, territorial analysis, potentials, consumer studies, consumer service, selection and training of the sales force, quotas and budgets. Other key points include further discussions on the difference between profit margin and turnover, allocation and aggressive salesmanship, and blanket coverage and selective selling. The variety of subjects and the impact of the discussions can be gathered to some extent, from the following taken from some of the summary reports required from those who attend.

"... We saw some of the exacting standards expected of production departments and how they are scientifically controlled in the Consumer Testing Lab. It showed me the real significance of the word 'quality.'"

"... I know, of course, that our products have a tremendous consumer acceptance, but Dan (manager of marketing research) showed me why."

"... The meeting was truly an education in the various company departments and services. We will now be able to get more value from our time as middle men, I will be able to represent both the customer and the company more efficiently."

"... I learned a lot about our industrial products. I was amazed to hear that we are applying for a patent on our 'two-way stretch' in our Industrial Wipers."

District manager assignment and training

These statements come from men who will soon become Scott district managers. When an assignment is made, probably to a one-man district, the salesman will spend another three days at his training center before going to his district. Here, with his first instructor his progress to date is again reviewed. To prepare him for his new responsibility, however, the conversation leans to techniques such as: credit policies and brand assortment in pool cars. After this stopover, the new district manager proceeds to his new assignment where he has a week or more to work with his predecessor. This training accomplished, the man has

his own district and has arrived at that stage where he is in charge of himself. He has become his own boss.

As he demonstrates his sales and organization ability, his initiative and his understanding, he will qualify for larger and larger districts, and perhaps eventually a division.

During these years the men are encouraged to take self-improvement courses (the company picks up the tab) and is supplied with suggested reading lists. The company also sends selected men each year to Pitt and Harvard management training courses.

Training phases 3 and 4 are continuing programs designed to help leaders become better at their jobs in order to qualify for increased responsibility.

Each phase of training is spearheaded by formal conferences. These again set the stage for each new transition for the men. Conferences for promising district men give detailed attention to the mechanics and policies involved in aspects of the business, up until this point treated only generally.

District managers convene at Chester to hear detailed discussions from internal departments on marketing research, advertising, sales training and consumers' representatives (quality control).

Division managers represent the top echelon of field sales. These executives, in periodic conferences with staff executives, discuss concepts: market conditions, competition, effects of advertising and sales promotion and recruitment and training of young men.

Employee attitude survey

At about five-year intervals, Scott's Industrial Relations Department, through an independent research agency, conducts an employee attitude survey. Results are compiled and measured against previous reports. These have shown that recognition of a man as an individual is the most important factor in personnel dealings. It was this lead which caused a shift in the program to an emphasis on the individual.

One of the techniques used to accomplish this is the Personal Appraisal Sheet. It is not used in the widely-accepted manner, but rather as a guide to help the leader privately discuss the man's progress.

The heading "Ambition or Goals in Life" is given reful consideration. Men with ultimate goals ner than "sales" are discovered as a result of this procedure. While "sales" at Scott has provided many men with careers, others by indicating preferences shift into other lines of work. For example, many of Scott's officers began in sales. It is also interesting to note that the assistant vice president in charge of public relations was promoted to this spot recently after 15 years as national retail sales manager.

It is the tailored-to-the-individual aspect of Scott's recruiting and training which makes it unique. This method of hiring and helping men become executives has proved itself, and the program is paying off by: increasing case production; reducing selling costs, personnel turnover, and need for supervision; improving morale; eliminating misfits; and generating better customer relations.

An over-all economic survey of the pulp and paper industry

LOUIS T. STEVENSON

Economist, Tucker, Anthony & Co.
and former APPA economist

THE NATURAL SETTING for an over-all survey of the United States pulp and paper industry is the current economic activity of the country as a whole.

In 1953 the United States is enjoying near boom conditions. In the table will be found comparisons of recent data with that of 1951. These records will suffice to clarify the picture.

The year 1951 was close to a boom year, but it is being exceeded this year in production of both durable and non-durable goods, gross national product, national income, personal consumption expenditures, and per capita disposable income. Unemployment and wholesale commodity prices are lower. Stock prices of manufacturing companies are about even with 1951, and the steel industry's rate of operations is off about 5 per cent, based on an enlarged capacity, although actual tonnage is about 5 per cent above 1951.

All told, the picture is one of high-level activity in the United States economy. The high production rates have on the whole kept pace with the steadily growing population, which has increased by 5,000,000 between the years of 1951 and 1953.

An important aspect of the economy is that per capita disposable income, as measured in constant dollars, has increased, showing that the average "spendable" income has more than kept pace with the changing price level. This permits individuals to maintain and to slightly increase living standards.

The paper industry functions within this setting and at the same time contributes to it. Permeating every business activity, as an essential and integral part, paper is an ever-growing factor in our daily lives. The industry's growth has been phenomenal and there appears to be no end to it in sight.

Characteristics of the demand for paper

With the exception of sanitary grades, paper as such is seldom sold to the consuming public for individual consumption. Demand for paper and board is a "derived demand" dependent upon the sales to the public of other commodities such as groceries, magazines, radios, refrigerators, cement, books, houses and the requirements of business offices in general for printed matter. For this reason, the paper industry is sometimes called a "service industry."

However, the paper industry for many years has been growing faster than population, faster than the deflated gross national product. While the industry is dependent upon general business conditions and responds to fluctuations in them, paper production and consumption do not retreat as far as general business does on the down-swings.

Industry problems

Up and down movements in the paper industry, therefore, are primarily due to movements in general business. However, the paper industry itself is large and complex. It draws the bulk of its raw material from the forests of the United States, but large tonnages come from the forests of Canada and northern Europe and receive primary processing into wood pulp in these countries.

▸ Over-all production in 1953 estimated at 26,600,000 tons. No decline anticipated in 1954 but, should general business activity drop 10 per cent in the Federal Reserve Board Index, total paper and board production should still be 26,000,000 tons.

The paper manufacturers have problems of their own in adjusting production to the ultimate consumption of their products. Principal among these problems is recurrent overbuying and building of inventories by customers with subsequent liquidation. "Scare" buying created "shortages" in the last half of 1950 that would not have existed without the scare. The resulting accumulations of customers' inventories were liquidated in 1952. Thus, we have an abnormal peak in 1951 paper and board production of 26 million tons and a resulting low in 1952 of 24,400,000 tons. The year 1953 will show a recovery from the low of 1952, and the resulting over-all production should be about 26,600,000 tons.

Paperboard has been more volatile than the paper segment and is subject to wide swings. These are also accompanied by a high average rate of growth, so that a major down-swing seldom goes as low as the next previous one.

Comparison between economic data for 1951 and late 1953*

	Sept., 1953	1951 Monthly Average
1935-1939 = 100		
Index of industrial production	234	220
Index of durable goods production	311	273
Index of non-durable goods production	197	194
Unemployment (1000)	1,246	1,879
Unemployment as percent of civilian labor force	2.0	3.0
1947-1949 = 100		
Index of wholesale commodity prices	110.6	114.8
Index of consumers prices	115.0(3)	111.0
1939 = 100		
Composite index of stock prices all major industrial groups	181.0	184.9
Steel industry (percent of capacity)	95.1(1)	100.0
Steel industry (1000 tons)	2,144 tons(1)	2,108 tons
	1953 Third Quarter Adjusted Annual Rates	1951 Adjusted Annual Rates
Gross national product (billions)	371	$329.8
National income (billions)	311.0(2)	278.4
Personal consumption expenditures (billions)	233.0	208.1
Per capita disposable income	1,562.0	1,458.0
In 1952 dollars	1,536.0	1,488.0

(*) Source—"Economic Indicators October, 1953." Prepared by the Council of Economic Advisers, U. S. Government Printing Office, Washington, D.C. (1) Last week in September. (2) Second quarter 1953. (3) August, 1953.

Overbuying and retrenchment

In 1952, paper production remained rather steady, but paperboard production dropped sharply below the level established in the spring of 1951. During the current year, one of high consumption, paperboard production has exceeded consumption, while paper production has run below it. Paperboard may have built up a weaker position in the event that consumption should decline next year. This could result in lowered board production.

It is possible on the other hand that, because of current depletion of inventories in the paper segment, paper production in 1954 will be higher than in 1953 in order to rebuild those inventories, even though consumption may decline.

The expansion of pulp making capacity in the United States is being covered in another article in this issue. But it is important to know in connection with paper that there will be adequate supplies of pulp available in 1954. This seems assured.

Conclusion

The high rate of activity shown by business in general has led some to expect a reaction in general business next year. This view is not held by the author at the present time, November 1953. However, should it come and reach a drop of 10 per cent in the Federal Reserve Board Index of Industrial Production, total paper and board production could drop to about 26,000,000 tons.

Paperboard production would probably take the largest drop, while paper production might become higher than in 1953.

(*Continued from page* 1001)

as buttons, zippers, clothing ornaments, as well as the basic processors of wood, cotton, and other natural fibers, each in turn purchases for their own needs varying quantities of paper and board or products, principally for packaging purposes.

The above comparative tabulation shows considerable dissimilarity of pattern between direct purchases and the effects of final demand upon the production of pulp, paper and board, and products manufacturers. in the case of synthetic fibers (No. 52) for example, a direct purchase of $85,000,000 of wood pulp is indicated, yet there is practically no final demand for synthetic fibers as such and therefore no measurable final demand for wood pulp in this instance. Instead, synthetic fibers (composed largely of wood pulp), are processed into textiles which in turn end up in apparel as a final demand product. As a consequence, we see why the final demand for apparel has such an important effect upon wood pulp, first for synthetic fibers and then for the use of pulp in paper and board for packaging items.

A basis for projecting future markets

The heart of a marketing analysis is often its relation to future developments. The carrying through of a complete analysis projected into the future is a very difficult but not insuperable task.

The first step is an attempt to judge for a future period under consideration the probable aggregate level of economic activity. This will usually take the form of an estimate of the size of the Gross National Product under the expected conditions. Such factors as productivity and population growth will usually be considered, and some judgment will be required as to whether boom inflation, recession, or other conditions are to be expected.

Second, with some notion as to the aggregate level at which the economy is expected to operate, one may estimate what purchasing power will be exercised by the principal spender groups. Such estimates will depend on whether one expects exports to rise or fall, government expenditures for munitions or for foreign aid to increase or decline, whether consumer savings are likely to be relatively more or less important, whether a high level of equipment expenditures will continue, and so on. Experience, assisted by observation of current economic trends, government policies, international developments, and the like should be used as a guide.

The third step will be to judge the direction in which the important spender groups will exercise their purchasing power. This will require estimates of the expected change in importance for the consumer expenditure pattern of such things as passenger cars, television sets, new homes, house furnishings, food, clothing, and so on. An appraisal of the areas in which capital formation may be expected would be required. In the present world situation, a careful appraisal of the probable kind and amount of government expenditures may be especially important.

The result of all the above steps will, in effect, be a hypothetical duplication for some future period of the entries shown in Column D. In all the above, the input-output statistics themselves give no direct assistance except insofar as they provide a record of past behavior as a platform from which to launch projections.

Having formulated an estimate of the demand schedule to be imposed on the processing system, there remains to be considered the structure of that system itself. The input relationships for a base year, such as those implied in the 1947 input-output data, are not immutable; they change constantly, although in the aggregate rather slowly. There is no need to indicate the processes by which adjustments for change to input structures might be made. It will simply be pointed out that where changes in materials use, whether caused by technological shifts, price substitutions, or for other reasons, are relatively important, they are likely to be known; and if they are known some adjustment for them can be made. In any case, the fourth step should be a careful consideration of whether important structural changes have occurred, and the type and extent of any adjustments required to account for them.

The fifth step will join the estimated demand and processing structures to determine the consequences of the estimates on the pulp, paper and board and products industries. It is in this and the preceding step that the interindustry relations approach makes its direct contribution. For example, after having made necessary practical adjustments in the 1947 basic data and estimating percentage changes in the final demand for each category, a purely mathematical procedure may be followed. This is accomplished by raising or lowering the total direct and indirect requirement for pulp, paper and board, and converted products for each sector by the same degree as the final demand for each sector is estimated to have changed. The total of these requirements would be the over-all demand for domestic production of pulp, paper and board, and converted products.

A sixth and final step may be an interpretation of the results of the last stage in terms of the probable consequences for a single firm. The circumstances of the firm itself will largely determine how this is to be done and no generalizations about it can be made.

While the complexities of the kind of structural analysis portrayed above are difficult, they can be overcome. It seems a virtue, rather than a limitation of the approach, that a careful consideration of such problems on demand and processing structure as those raised above is required, and that the results of deliberate judgment on them can be specifically and quantitatively incorporated within the framework of the analysis.

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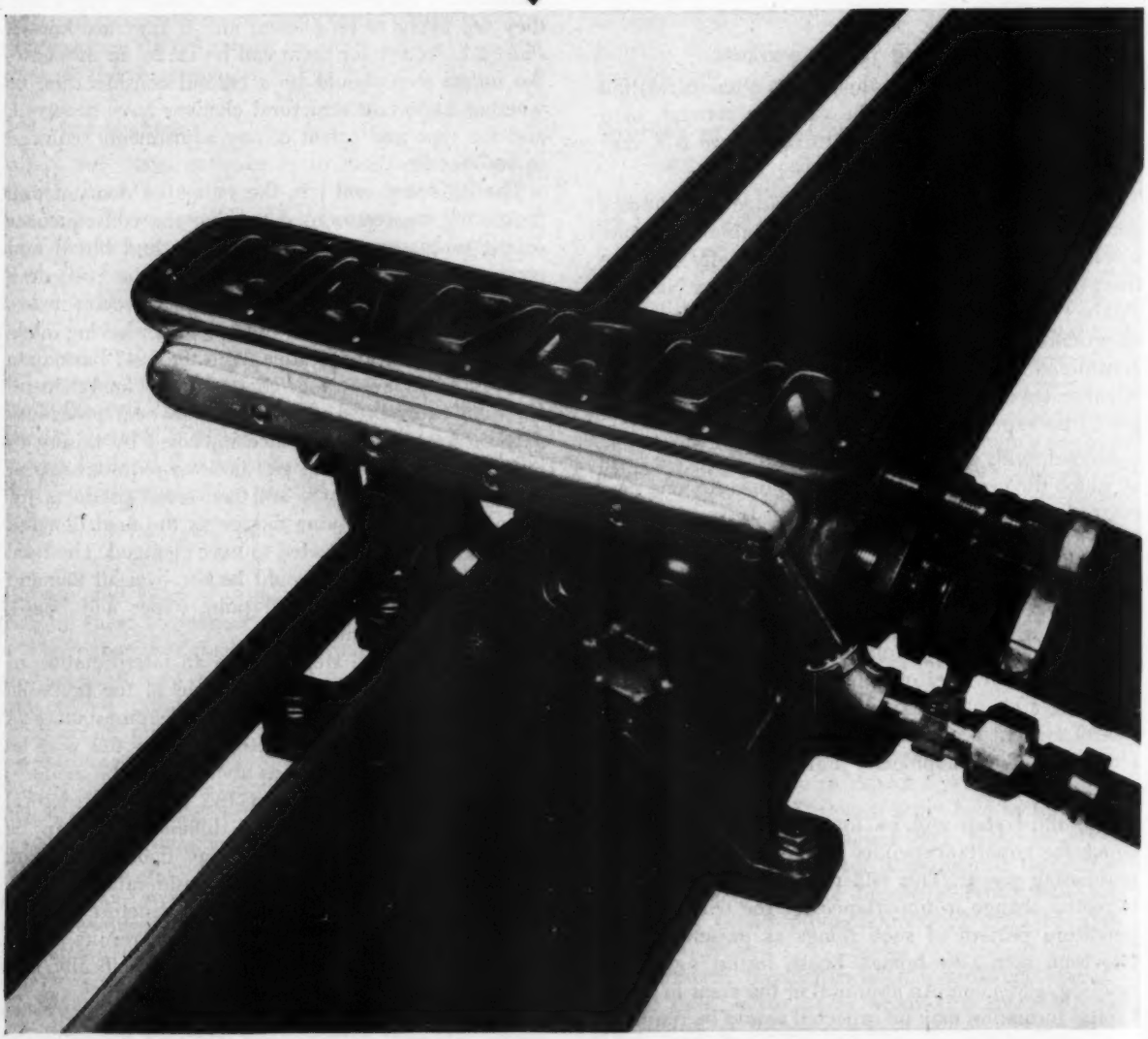

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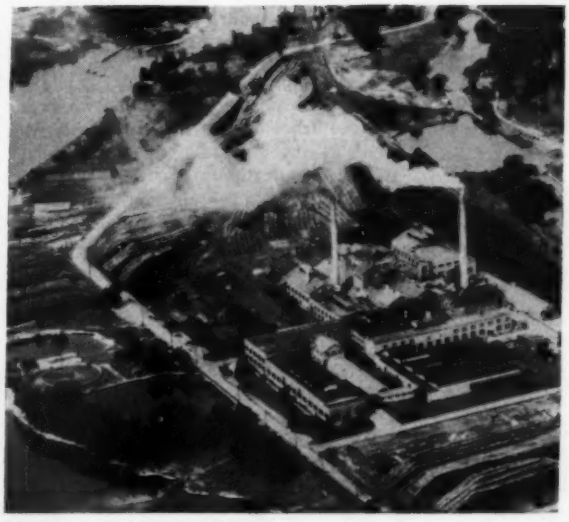

BEFORE completion of the installation heavy smoke poured from the Thilmany stack

AFTER operations began the volume and density were reduced to a great extent

Thilmany Completes $1,175,000 Smoke Abatement Project

FULL-SCALE OPERATION of Thilmany Pulp & Paper Co.'s new smoke washing process is under way. Built at a cost of $1,175,000, the process removes from the smoke 90 per cent of the solids that would otherwise pour from the stack of the firm's Kaukauna, Wis., plant.

As an anti-pollution method, the equipment does double duty. It reduces air pollution and at the same time consumes pulp-making wastes that were formerly released into the Fox River. The waste liquor is utilized as a spray to wash the smoke.

Additionally, the process is a fuel saver. The liquor is burned in place of coal. While not new at the plant, this use of the waste is made much more efficient. Company spokesmen have estimated that 260 tons of coal are being saved daily. "In 1945," they have reported, "120 tons of pulp and 20,000 lb. of smoke; today, 230 tons of pulp and only 5,000 lb. of smoke per day."

A three-fold process

First of its kind built anywhere, the unit is a three-fold washing, burning and chemical recovery process. It involves spraying the smoke with black liquor as it passes from the fire to the chimney. The solids adhere to the spray and fall with it to a pool of liquid at the base of the chamber. The liquor is then pumped to a furnace for burning.

The second step involves chemical recovery. A molten lava containing chemicals—mostly sodium carbonate and sodium sulfide—flows from the bottom of the furnace. Through yet another process the chemicals are recovered in pure form ready for reuse.

The new furnace burns at a temperature of 2500°F. and produces steam at 600 psi. The steam has double use. It first drives the turbines in the firm's new electric plant; reduced to 300 psi, it is then piped to the paper machines for driving turbines and heating the dryers.

Thilmany constructed its first scrubber at the close of World War II and operated it seven years. The original equipment removed approximately 30 per cent of the solids. Thilmany engineers working with The Babcock & Wilcox Co. started work on the smoke washer idea in 1942. A scale model was built and tested and the pioneer model designed.

C. R. Seaborne, executive vice president of Thilmany, directed the various steps leading to completion of the new system.

Hercules Expands Pulp Output

The Virginia Cellulose Department of Hercules Powder Co. has received a certificate of necessity for accelerated tax amortization on $7,000,000 at 55 per cent. According to the Office of Defense Mobilization, the Hopewell, Va., firm

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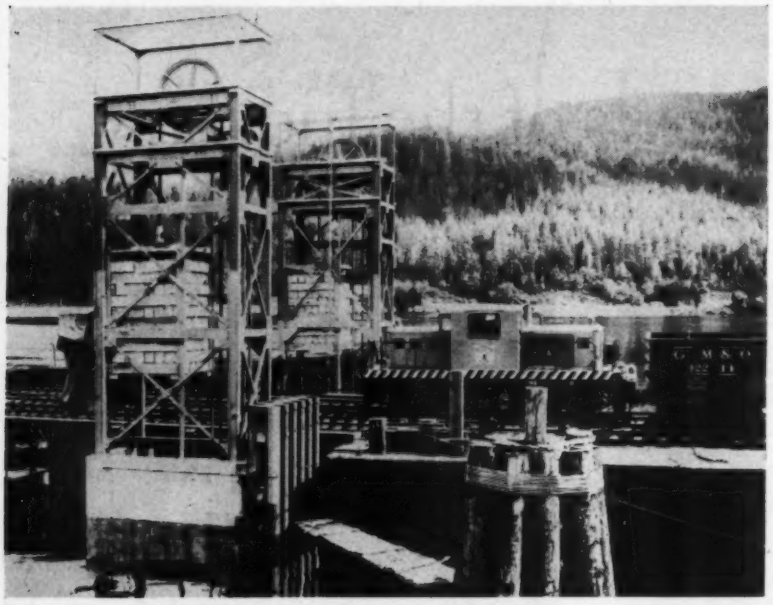


ARRIVAL OF THE FIRST locomotive and railroad cars marks the beginning of industrial expansion in southeastern Alaska; the Baldwin-Lima-Hamilton Corp. 50-ton diesel electric unit, purchased by Ketchikan Pulp Co. at Ward Cove, is being transferred from barge to ferry slip at the end of the long journey from the States

plans to expand its production of dissolving wood pulp. Until now, mill production has been restricted to chemical pulp from cotton linters.

Westvaco-Hinde & Dauch Merger Approved

Stockholders of West Virginia Pulp & Paper Co. have approved a plan to acquire Hinde & Dauch Paper Co. as a subsidiary through an exchange of stock. The merger was recommended last August by directors of both firms (see THE PAPER INDUSTRY for September 1953, page 640).

The Westvaco stockholders approved proposals to split and reclassify the firm's common stock as a prerequisite to an exchange with the Sandusky, Ohio, firm's stock. The plan through which West Virginia Pulp & Paper would acquire Hinde & Dauch as a subsidiary is based on an exchange of 1⅓ shares of the new $5 par value Westvaco common for each share of H&D.

West Virginia stockholders also approved proposals to split each share of their common into four shares, to change the stock from no-par-value to $5 par value, and to increase the authorized stock from 1,500,000 to 7,500,000 shares.

P&W to Build Brazilian Mill Utilizing Eucalyptus

Parsons & Whittemore Inc. of New York, N.Y., has contracted to build a $6,000,000 mill in Brazil for the manufacture of prime bleached pulp from eucalyptus wood. According to Karl F. Landegger, president of P&W, import and export licenses for machinery and equipment have been approved.

The 50-ton capacity mill is to be located in east central Brazil and is being built for Compania Paulista de Cellulosa Copas of Sao Paulo. It will be the first Brazilian mill to make pulp exclusively from the wood of the eucalyptus. The two other Brazilian mills use pine as their primary raw material.

The mill is to be a completely self-contained unit, including not only the normal pulp machinery and equipment but a complete electrolytic plant. The latter will produce sodium hydroxide and chlorine. Paper products will include writing, printing, bond, book and other similar types.

The mill is being built under Parson & Whittemore's "Private Point IV" program, which facilitates the construction of pulp and paper mills in underdeveloped countries. Each unit is designed to produce pulp and/or paper from raw materials indigenous to the country in which it is built.

Black-Clawson a supplier

Compania Paulista de Cellulosa Copas is financing the mill with assistance from P&W. In conjunction with Lyddon & Co. Ltd., its London affiliate, P&W will supply about $4,000,000 in machinery and equipment through the Black-Clawson Co. of Hamilton, Ohio, and Millspaugh Ltd. of Sheffield, England, affiliated machinery manufacturing firms. A substantial part of the machinery will be manufactured in France under license. Payment will be through the Franco-Brazilian payment agreement.

Aside from supplying machinery and equipment, P&W will do the complete design and engineering jobs, supervise construction, and work with the Brazilian management in the wooding, timbering and sales operations.

60 YEARS AGO last month a group of business men meeting in Cincinnati formed Champion Coated Paper Co., predecessor to the Champion Paper & Fibre Co. of the present day; one of the signers of the articles of incorporation was Harry Graham Pounsford (r), who has served the company for all its 60 years on the board of directors; he is shown above with Reuben B. Robertson, Champion's board chairman, as he received a silver bowl in recognition of his service

Columbia Buys Galante Mill at Walloonsac

Columbia Box Board Mills Inc. of Chatham, N.Y., has purchased the Walloonsac plant of Thomas A. Galante & Sons Inc. The price was not disclosed, but it was reported unofficially as more than $600,000.

The Rensselaer County property includes a large box board mill building, several smaller structures, and 100 acres of land. The one fourdrinier has a trim width of 84 in. Production of light and heavyweight kraft papers and converting papers totals 112 tons daily.

The Walloonsac mill had been closed since May, when the Galante firm consolidated operations at a plant in Mechanicville.

C-Z Acquires 96% of Canadian Western

Crown Zellerbach Corp. of San Francisco has announced the acquisition of more than 96 per cent of the stock of Canadian Western Lumber Co. Ltd. of Vancouver, B.C. The exchange basis was one share of C-Z common for three of Canadian Western.

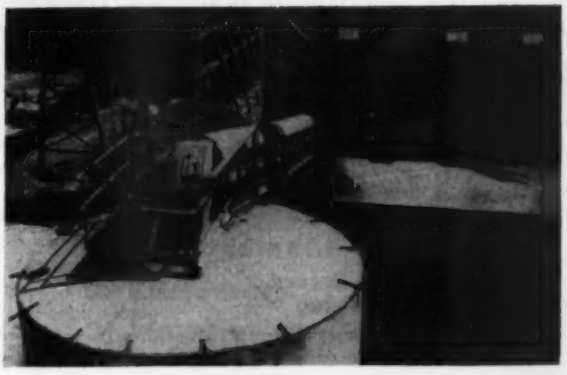
A recent decision by the Supreme Court of Canada in another case has halted a move by Crown to become entitled, under the Canadian Companies Act, to acquire on the same terms the

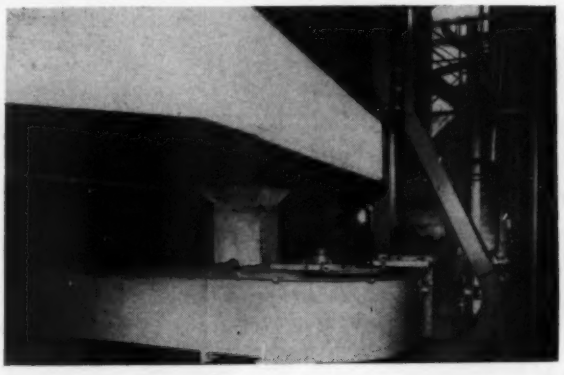
Materials Handling at Camp

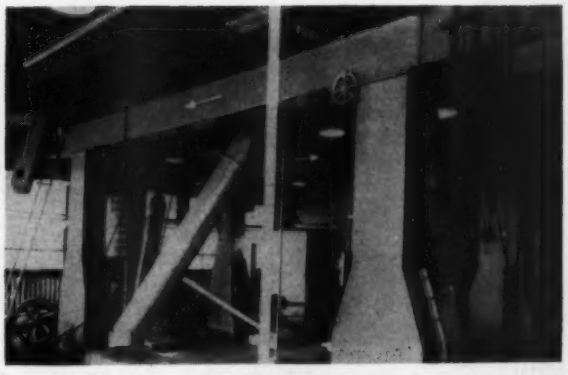
RIGHT: Belt conveyor from repulper to storage as installed in expansion program begun in 1951 at Camp Mfg. Co. in Franklin, Va.; the 16-in. conveyor handles 21 tons per hour at a rate of 100 fpm; the Stephens-Adamson Mfg. Co. belt installation runs on 62-ft. slope centers; a rubber wiper cleans the belt at the discharge point

BELOW LEFT: 19- by 27-ft. sidepull Redler feeding loop boot unit under soaking tanks; disk feeders discharge raw chips from storage bins to an 11-in. L-type Redler that moves horizontally under the bins for 42 ft. before beginning 43-ft. rise; the "L" unit feeds the sidepull at a rate of 1600 cu. ft. per minute; the sidepull discharges to the storage tank

BELOW RIGHT: 11-in. sidepull Redler feeds chips to soaking tanks through four feed points; swivel chute returns overflow from defibrator; chips move from the tanks to another sidepull Redler unit which carries to a loop boot elevator rising 75 ft. to the defibrator







small minority of shares remaining unexchanged. C-Z has been advised by counsel that in view of the court's decision it would be irregular for exchange of Canadian Western shares to continue—at least for the present.

To tie in with Crown Zellerbach, Canadian Western has reorganized its top executive organization. Robert J. Filberg, first vice president, becomes president of Canadian Western, which operates one of the largest sawmills in the British Commonwealth, a plywood mill, and owns a half interest in the Elk Falls Co. newsprint mill on Vancouver Island. (The other half interest is held by Pacific Mills Ltd. of Ocean Falls, which in turn is 95 per cent-owned by C-Z.)

Former president Henry J. Mackin has been made a director of Crown Zellerbach and will continue in an advisory capacity to the management of its Canadian interests. Wilson J. Mackin, a son, is now first vice president of Canadian Western and a director of Elk Falls. James C. Sheasgreen becomes vice president and a director of Canadian Western in charge of forest management.

The new owners have approximately 10 billion ft. of standing timber in British Columbia, matched by almost the same amount in Washington and Oregon. Twenty-eight per cent of all Crown Zellerbach assets are now located in British Columbia. A large additional plant is to be erected at Elk Falls.

Sutherland Plans Expansion

Sutherland Paper Co. recently announced plans for a $2,750,000 expansion program at Kalamazoo. William Race, president, declared that the firm will construct a mill for the manufacture of paper specialties, such as cups, plates, dishes, food packages and cans. Location of the plant will be a 75-acre site on Kalamazoo's southern outskirts.

J. J. Arnold Buys St. Regis Mill

Jack J. Arnold

The two-machine paper mill of St. Regis Paper Co. at Harrisville, N.Y., has been sold to Harrisville Paper Corp. Jack J. Arnold heads the syndicate that owns all the preferred stock and 75 per cent of the common of this firm. St. Regis purchased 25 per cent of the common.

According to Roy K. Ferguson, president of St. Regis, his firm has turned over the Harrisville mill to the new group "because of their strong financial background and experience in the paper industry."

The Harrisville mill was founded in the early 1900s as Diana Paper Co. and was purchased by St. Regis in 1927. The present daily capacity is 70 tons of groundwood specialties, with a 42-ton groundwood pulp mill.

St. Regis will cooperate with Mr. Arnold in expanding and improving the mill to increase the production capacity and to further facilitate the development of water power within the mill property. Supplying additional equipment will be The Bagley & Sewall Co. of Watertown.

Bowaters Southern Confirms Contract with T. V. A.

A spokesman for Bowaters Southern Paper Corp. has revealed that his firm has confirmed a contract with the Tennessee Valley Authority under which T.V.A. will supply a portion of the power to the newsprint mill Bowaters is building in Charleston, Tenn. At the same time, the general counsel for T.V.A. defended the authority's right to sell power direct, rather than through an intermediate distributor.

The Volunteer Electric Cooperative of McMinn County, operating as a distributor of T.V.A. current in the area, had challenged the authority's right to make the deal with Bowaters. The cooperative maintains that it should make the sale as T.V.A.'s agent in the territory.

According to T.V.A.'s general counsel, the authority believes it has a legal right to deal directly with a large power consumer. He referred to the 20,000-kw steam plant Bowaters is building to sup-

ply more than one-half of the paper mill's power. "There'll be times when we'll be buying power from them," he remarked.

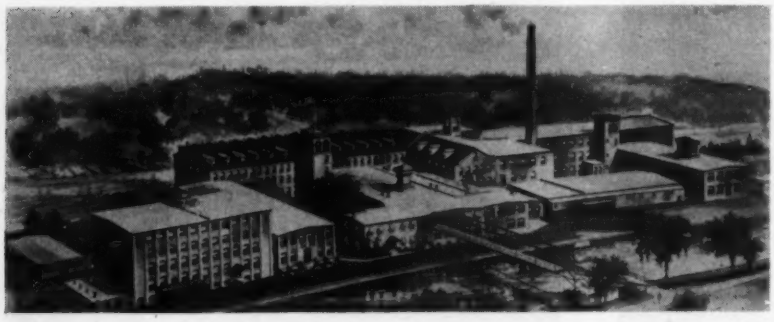
With total power demand estimated at 37,000 kw when the mill is in full operation by next spring, Bowater has a contract by which T.V.A. would supply 17,000 kw of firm power and up to 10,000 kw of stand-by power.

World Production Record Reported at Union Bag

The Union Bag & Paper Corp. plant in Savannah, Ga., has established a world's record in daily paper production, according to J. R. Lientz, division manager. Mr. Lientz announced that the mill had produced 2054 tons of kraft paper and paperboard in a singe 24-hour period.

He reported that the average daily production of 1801 tons of paper and paperboard in October represented an all-time monthly production record for the plant; he added that this amount had never been equaled by any American or foreign mill.

Since a sixth paper machine was placed in the production line a few months ago, employees in the woodyard and in the mill have been aiming at a daily 2000 tons.



KEITH PAPER CO. mill at Turners Falls, Mass., which was recently purchased by Strathmore Paper Co.

Keith Paper Co. Purchased by Strathmore; Modernization Planned

INABILITY TO MEET current demand has resulted in the purchase of Keith Paper Co. of Turners Falls, Mass., by Strathmore Paper Co. of West Springfield. The announcement was made by Cassius M. Bryan, Strathmore board chairman. Keith is to be maintained as a separate organization at the present time.

According to Mr. Bryan, Strathmore has been studying various means of increasing its productive capacity to meet increased demand. By its acquisition of Keith the firm has complemented its present equipment with machines capable of producing Strathmore-type papers.

Aside from changes in the top executive level occasioned by the change in ownership, Strathmore is not contemplating any major changes in Keith's operating personnel.

Equipment at Keith consists of four fourdriniers. Products include rag content bond, ledger, papeterie, writing, index, onion skin, text, technical specialties, tracing, chart, and drawing papers. Strathmore produces text, cover, bond, writing, vellum, bristol, blue print, artist, and specialty papers.

Keith Paper Co. was founded in 1871 by John Keith, whose ambition was to manufacture paper of the highest quality. The original mill was equipped with two paper machines, which in 1872 were producing "Keith's Fine Writings, Bonds and Ledgers."

Prominent in the firm's affairs was Albert R. Smith, who was director, treasurer and general manager from 1912 until 1937, when he retired after 50 years' service. It was during this period that the mill was completely electrified, moderniized, and a new power plant erected.

In a re-financing plan in 1938 Keith entered into an agreement with Deerfield Glassine Co. of Monroe Bridge, Mass., whereby the management of that company was given an option on the controlling interest. This option was exercised in 1944. By means of a rehabilitation program during this period production was increased, equipment was rearranged, and much new equipment—including a new air dryer—was installed. Production was more than doubled and the range of papers broadened.

In March of 1953 the firm was purchased by Aaron Krock. Under his leadership plant improvements have been made.

Mr. Bryan stated that Strathmore is planning to make changes in the Keith mill and operating methods in order to bring them into harmony with Strathmore operations.

New executive line-up

The new Keith officers are: F. Nelson Bridgham, president; C. M. Bryan, vice president; Paul A. Wilks, treasurer and clerk; Kenneth A. Sheridan, assistant treasurer and mill manager, and James H. Sweet, sales manager.

The new directors are: Mr. Bridgham, Mr. Bryan, Harry E. Riggs, Lawrence W. Shattuck, and Mr. Wilks.

At the time of the acquisition, the Keith officers were: Aaron Krock, president; Mr. Sweet, vice president and general manager; William Roberts, treasurer; Herbert Gold, assistant treasurer, and William Tucker, clerk.

Westvaco Forms New Division

West Virginia Pulp & Paper Co. has announced the formation of a new division to broaden the commercialization of its lignin products. It will be under the direction of Dr. Paul Wiley, who has been director of the firm's development department at Charleston, S.C., since 1947.

The new organization, located at Charleston, has started operations and is to be known as West Virginia Pulp & Paper Co., Polychemicals Division. Its activities will embrace all phases of lignin operations, including production, product and uses development, sales and administration. Personnel will be drawn largely from members of the development department at Charleston.

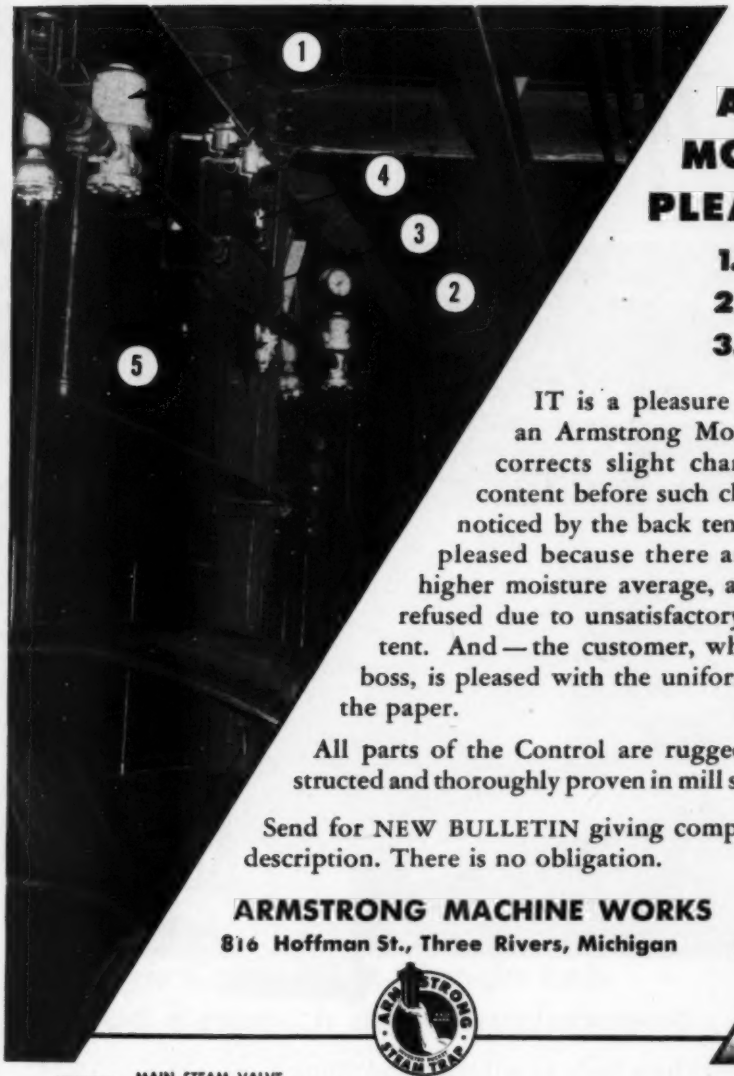
From the alkaline pulping industry in the United States there is a potential annual lignin supply of 2,700,000 tons available for processing. From Westvaco's Charleston plant alone 144,000 tons per year are potentially available.

For several years the company's Charleston mill has been producing several grades of pine wood lignin on a semi-commercial scale. Marketing has been under the brand name "Indulin."

Bergstrom Seeks Tax Refund

Bergstrom Paper Co. of Neenah, Wis., has petitioned the United States Tax Court for a refund of about $40,000 in excess profits taxes for 1941 through 1943. Nathan H. Bergstrom, president of the firm, testified in Milwaukee October 19 before Hugh G. Postles, a commissioner of the court.

George Spohn, Milwaukee attorney representing Bergstrom, claimed that the firm's capacity had decreased between 1936 and 1939, and that therefore those years could not accurately be used as a base period on which to determine the tax.



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IT is a pleasure to operate machines with an Armstrong Moisture Control because it corrects slight changes in sheet moisture content before such changes would even be noticed by the back tender. Management is pleased because there are fewer breaks, a higher moisture average, and no shipments refused due to unsatisfactory moisture content. And—the customer, who is the final boss, is pleased with the uniform quality of the paper.

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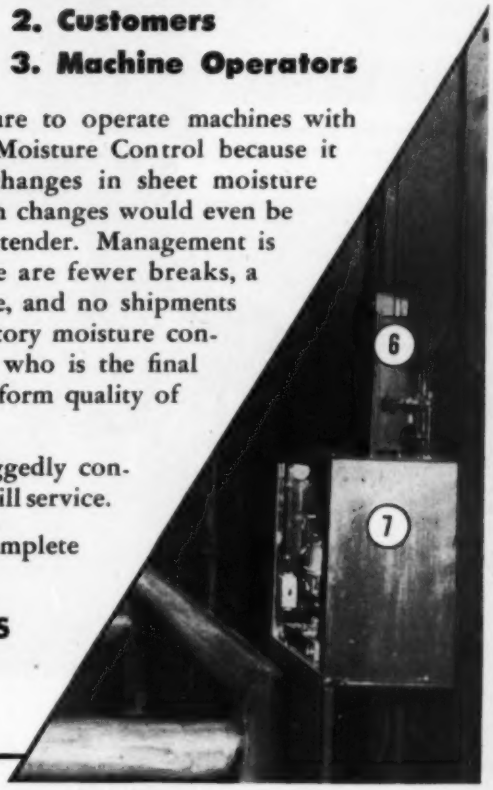

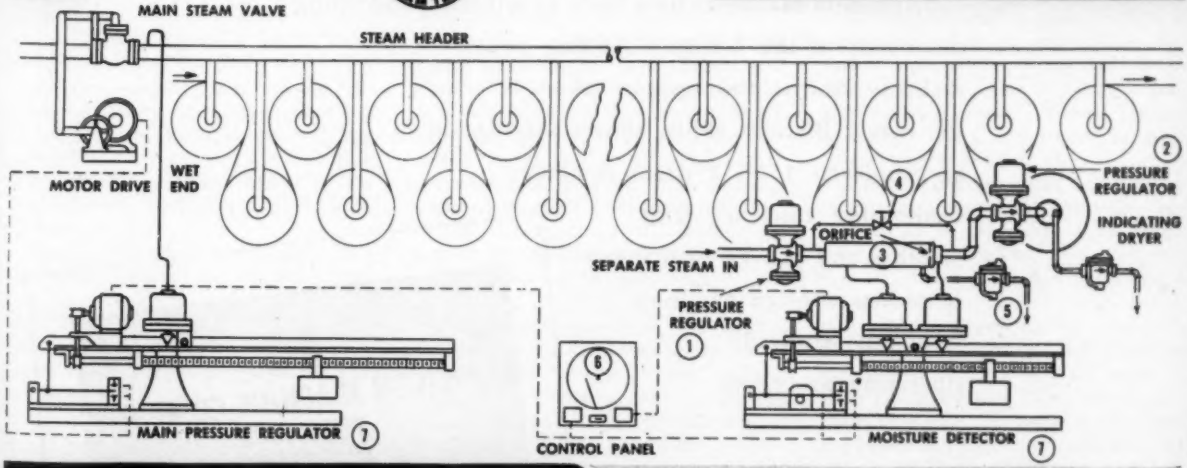

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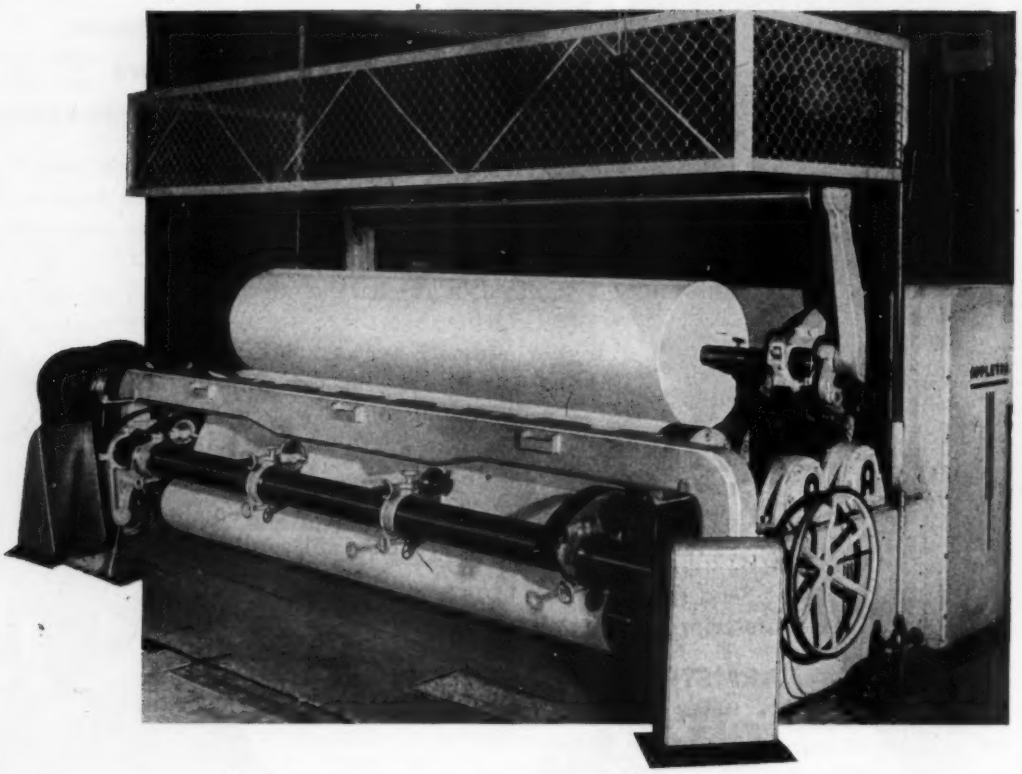

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TENSILE TESTS BEING conducted at the conversion materials testing laboratory

CONVERSION MATERIAL test results being tabulated at the St. Regis laboratory

VIEW OF THE chemical laboratory; note tile walls and Panelyte work surfaces

REFRIGERATOR DOORS provide access to the high-humidity room at Pensacola

BAG TESTING stations where bag performance is accurately evaluated

MEZZANINE FLOOR provides view of bag testing facilities at St. Regis lab

St. Regis Completes Florida Lab for Bag Research and Development

EXTENSIVE NEW LABORATORY facilities have recently been completed at the St. Regis Paper Co. Kraft Center in Pensacola, Fla. The 60- by 70-ft. wing in the new administration building provides laboratory and office space for carrying out the St. Regis multiwall bag research and development program. This is conducted in conjunction with the St. Regis Central Technical Laboratory in Deferiet, N.Y.

Equipped primarily for evaluation and developmental work on multiwall bags and the conversion materials used in their manufacture, the laboratory has been especially designed and contains a broad variety of testing equipment. The four major units are a conversion material laboratory, a chemical laboratory, a high-humidity room, and a bag-testing laboratory. A special room contains mechanical equipment.

Director of the Kraft Center's laboratory is Robert P. Anderson. The technical departments of the firm's Printing, Publication and Converting Paper Division, Multiwall Bag Division and Kraft Paper Division were consolidated in 1951 under Dr. K. A. Arnold.

Conversion materials for all St. Regis plants in the United States, Canada, and Puerto Rico are tested in the conversion materials laboratory to protect the plants against possible use of defective materials. A file and graphic analysis are maintained of the paper tests made by each of the firm's kraft paper mills.

The conversion material testing laboratory is conditioned to 73°F. and 50 per cent relative humidity; but it may be operated over a wide range of temperatures and humidities for special studies. Testing equipment in this room includes basis weight, caliper, mullen, tear, tensile, strength, porosity, smoothness, scuff, stiffness, and folding endurance testers. A new A. van der Korput dynamic tensile tester has recently been added.

Chemical laboratory

Chemical laboratory equipment includes ovens, an analytical balance, scales, pH meter, refractometer, blenders, viscosimeter, Tappi M. V. P. cups, and Wink-type paper moisture content cups. The temperature of the room is maintained at 73°F. and the humidity at 45-55 per cent.

The high-humidity room, which is maintained at 90 per cent relative humidity and 100°F., is designed to accelerate the evaluation of variously constructed bags, films, closures, seams, adhesives, valves, and sleeves as moisture or grease barriers.

The high-humidity room and the bag-testing laboratory are especially constructed to permit testing under severe atmospheric conditions. Floor composition consists of the following layers: 5 in. cement, asphalt barrier, 2 in. insulation material, asphalt barrier, aluminum foil, and 5 in. cement. Walls and ceilings are covered by three separate layers of sheet aluminum with ¾-in. spacing between each layer. All joints in each layer are sealed by lead tape, and the first layer is integral with the aluminum foil in the floor. The fourth exposed wall is of 16 gauge satin finish aluminum sheeting sealed by aluminum stripping with gasket-type seal.

Simultaneous testing of two different sets of bags and materials—one in each

NEW HAVEN Board & Carton Co. at New Haven, Conn.

New Haven Firm Announces Change in Corporate Name

As of December 1, New Haven Pulp & Board Co. of New Haven, Conn., changed its name to New Haven Board & Carton Co. The firm is one of the five largest producers of printed folding cartons.

According to the management (no personnel changes are planned), the change is a logical step in the growth and expansion program that was started in 1938. At that time, New Haven—which was founded in 1900 as a paperboard mill—started converting paperboard into printed folding cartons. In 1945 the firm bought the controlling interest of The Bartgis Bros. Co. of Ilchester, Md., which is now operated as a subsidiary. This increased paperboard tonnage to more than 100,000 tons per year. Since that time much modern converting equipment has been installed, and the two firms now produce approximately one billion folding cartons annually.

New Haven also owns La Have Pulp Co. Ltd. in New Germany, Nova Scotia, and Fish Pier Box Co. Inc. in Boston.

Executives include Joseph S. Miller, president; F. S. Wakeman, executive vice president; Walter F. Daley, Ellsworth W. Cowles, Stephen W. Smith, and Walter R. Smith, vice presidents; Henry D. Fisher, treasurer, and Julian H. Morgan, secretary and assistant treasurer.

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end of the 18- by 60-ft. room—is possible in the bag test laboratory. A suction grill to the air conditioning equipment is located in each end of the room to prevent intermixing of materials. A grill-type mezzanine floor provides storage space and ready access to much of the mechanical equipment and the dust collector.

Located at one end of the 60-ft. room is the following St. Regis equipment: elevator, tilt table, and end drop testers, as well as a St. Regis 107-FC one-tube commercial packer for cement and similar materials. A screw conveyor receives the material from bags broken during testing, moves it to a bucket elevator, after which it is passed through a slotted screen and returned to the hopper above the packer. A dust collector with suction at the packer and also at the boot of the screw conveyor controls the dust problem.

The other end of the room houses a portable cement repacker; 100-LS screw packer for flour, sugar, fertilizer and similar materials; a flat drop tester, and an end drop tester. Sewing machines for sewn open mouth bags and a wax dipping bath complete the permanent equipment. Being secured is a St. Regis 100-LF gravity type packer for calcium chloride and corrosive chemicals.

Humidification and heating

The conversion material test laboratory is served by a 7½-ton sealed unit with auxiliary reheat and rehumidification coils. Air for the high-humidity room is treated by a humidification and heating unit located in a room directly above it. This service room is conditioned to 95°F. to provide heated air and to prevent rusting and corrosion of the conditioning unit.

The bag-testing laboratory is provided with a flexible air conditioning system that permits maintaining conditions at from 15 to 90 per cent relative humidity and 40°F. to 100°F. The poorer performance of bags at low humidities and temperatures is a seasonal problem in the industry. Equipment contained in the conditioning system includes: a continuous curtain oil bath air cleaner to prevent dust and chemicals from getting onto the conditioning equipment; a dryer; a 50-ton compressor with a 16-bank direct expansion cooling coil; reheat coil; rehumidification element, and 6000 cfm fan. The control panel in the bag test laboratory has pneumatic switches that control all elements of the system.

The 150-lb. steam pressure required by the dryer is reduced to 10 psi by a steam reduction valve. Steam reduction stations are located at the various conditioning units to reduce the 10 psi steam to the proper pressure for the particular conditions being maintained in the laboratories.

Anglo-Canadian Investigating Saskatchewan Possibilities

Anglo-Canadian Pulp & Paper Mills Ltd. has signed an option on a tract of northern Saskatchewan woodlands and is investigating the possibility of building a pulp mill 50 miles northeast of Prince Albert.

The 12-month agreement with the provincial government expires September 30, 1954, and will cost the firm $10,000 rental for the 2,000-sq.-mile area. If the option is taken up, Anglo-Canadian must begin construction of a $5,000,000 mill by June 1, 1955. The announcement was made in a joint statement by the Hon. J. H. Brockelbank, minister of natural resources, and H. D. Ruthman, secretary of Anglo-Canadian.

Great Lakes Moves Offices

In a move designed to expedite operations at the Lakehead, Great Lakes Paper Co. Ltd. is moving its main offices to Fort William, Ont. The announcement was made by W. Earl Rowe, president of the firm, who will maintain his headquarters at Toronto.

Active management at the Lakehead is to be under the direction of C. J. Warwick Fox, whose appointment as vice president and general manager was recently announced.

Canadian International Forms Pulp Division

F. L. Allen, general manager of Canadian International Paper Co., has announced the establishment of a Pulp Division to be headed by F. J. Griffen, formerly manager of newsprint mills. The division will include mills at Temiskaming, Que., and Hawkesbury, Ont., and the bleach plant at Gatineau, Que.

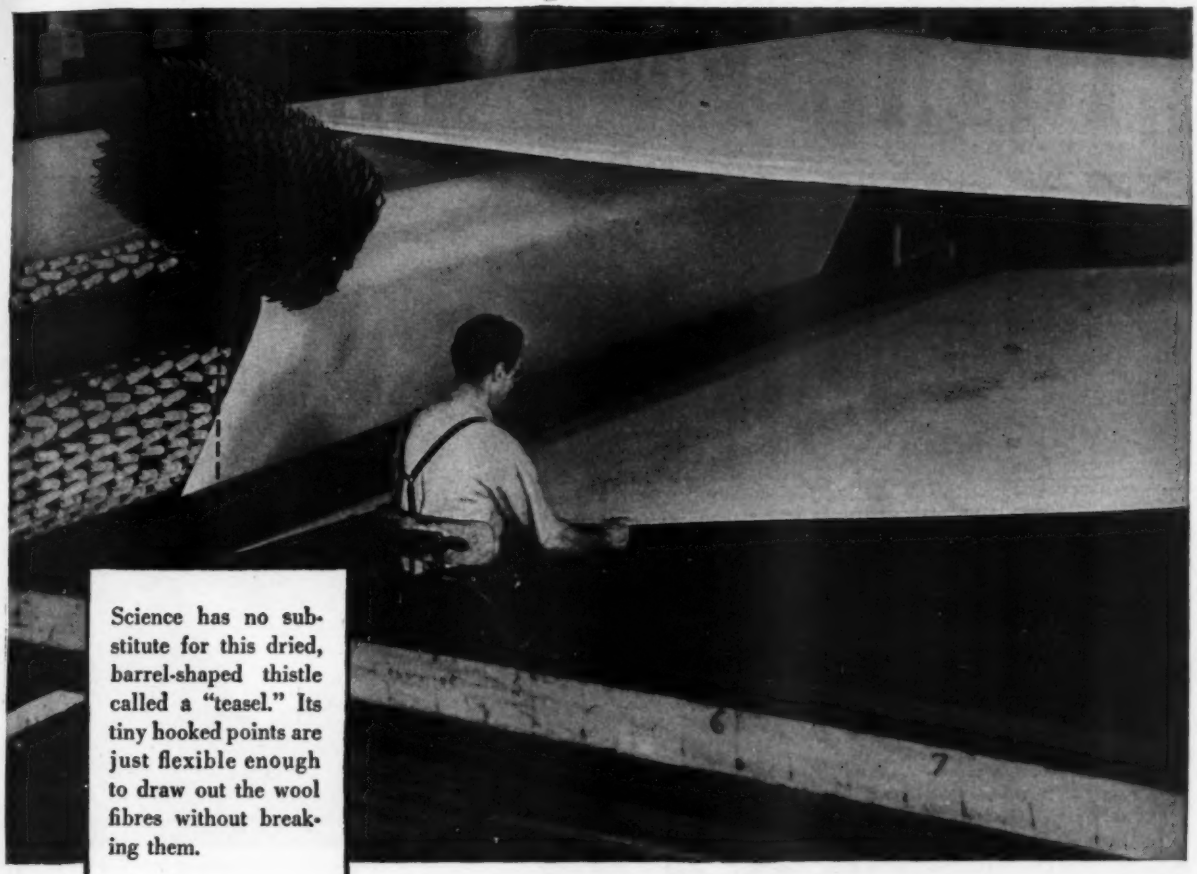
The operation of the mills included in the Pulp Division will come under the direction of B. Grav, mill manager at Temiskaming. E. B. Hinman, manager of the Dalhousie, N. B., newsprint mill since August of 1952, has been made manager of newsprint mills, with headquarters at Montreal. C. H. Champion, formerly assistant manager at Gatineau, becomes manager at Dalhousie.

Gulf States Gift Aids Growth of Alabama School

James E. Ayer

An annual grant of $35,000 by Gulf States Paper Corp. of Tuscaloosa is a big factor in the revitalizing of the department of pulp and paper technology at the University of Alabama. The curriculum is the only one of its kind in the state. There are only two in the entire Southeast.

James E. Ayer, former engineer with West Virginia Pulp & Paper Co. at



Science has no substitute for this dried, barrel-shaped thistle called a "teasel." Its tiny hooked points are just flexible enough to draw out the wool fibres without breaking them.

paper is our business, too!

Some paper machine felts must be napped to improve finish, increase porosity or provide extra cushion. This operation consists of bringing the felt into contact with a revolving cylinder which is covered with "teasels." As the "teasels" roll against the felt, their tiny hooked points draw out the wool fibres to produce a napped surface. To meet the exact specifications of each felt application the nap is rigidly controlled by varying the pressure and number of rotations.

In every operation: sorting the raw wool, scouring, blending, carding, yarn spinning, weaving and finishing . . . our facilities and processes are the most modern in the textile industry. **Yet *paper making* is *really* our business, for every Albany felt is designed and manufactured to meet the special requirements of an individual machine for finish, drainage and trouble-free performance. The result: MORE TONS PER DAY.**

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ALBANY FELT COMPANY

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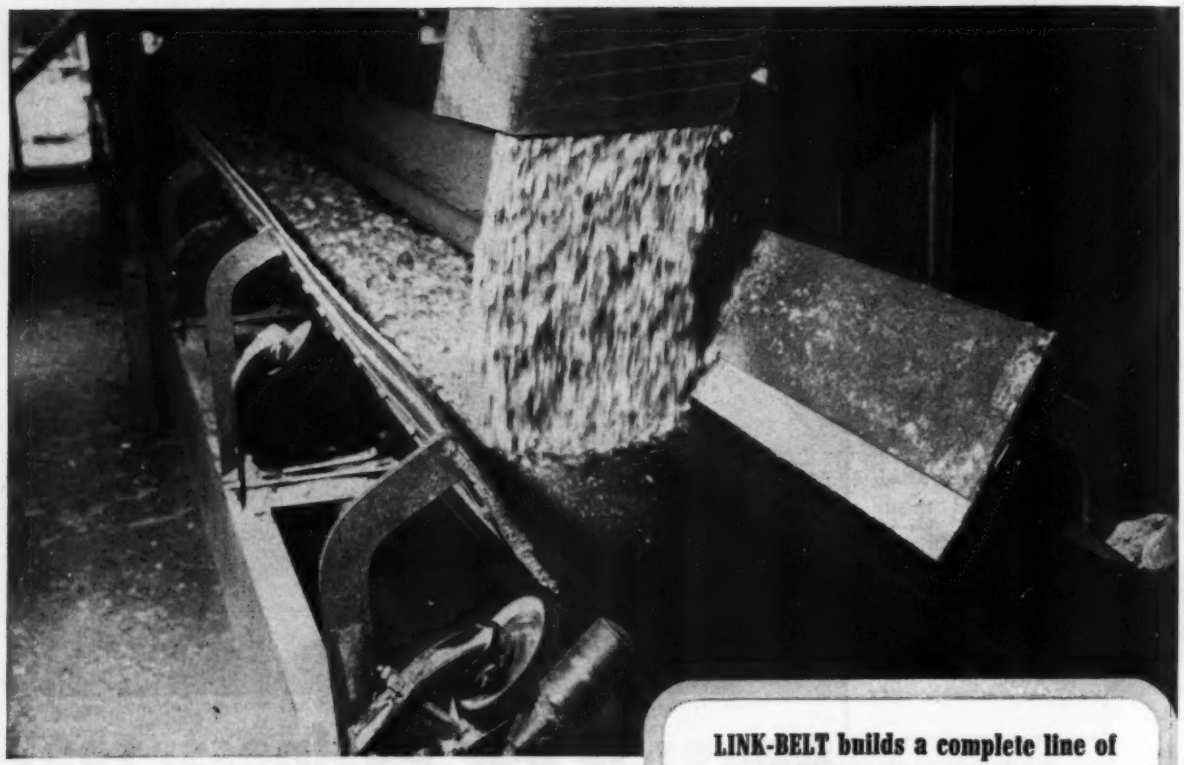

Link-Belt 45° idlers provide greater capacity for chips as they move by belt conveyor at this mill. Note belt-training idler.

It's your assurance of top efficiency with LINK-BELT belt conveyors

HERE'S how "total engineering" works for you when you use Link-Belt Belt Conveyors. First, Link-Belt conveyor engineers analyze your needs—then recommend the *right* components. In addition, Link-Belt can supply all related equipment — other types of conveyors, feeders, elevators, car dumpers and shakers. And Link-Belt will build your supporting structures and enclosures . . . install the job completely, if desired. Call the Link-Belt office near you for any engineering assistance you need.

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BELT CONVEYOR EQUIPMENT 13.280

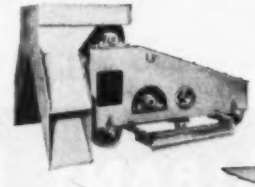
LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales offices in Principal Cities.

LINK-BELT builds a complete line of belt conveyor components

ALL TYPES OF ROLLER BEARING IDLERS

20° troughed idler

45° troughed idler

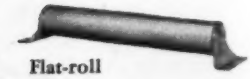


BELT AND MOTOR PROPELLED TRIPPERS

COMPLETE TERMINAL MACHINERY

Return idler

Belt-training idler



Flat-roll

Charleston, S.C., has assumed the post of acting department head.

Money donated by Gulf States will help build a completely modern laboratory to manufacture and test papers of various kinds. Mr. Ayer has expressed hope that the lab will be in operation by next year, when eight students will be enrolled in the pulp and paper course.

"Few people realize what big business papermaking is," Mr. Ayer has declared. "In terms of value of the finished product, it ranks sixth among all industries in the United States." And, he added, authorities expect the papermaking capacity of the Southeast to double in eight years.

Paper Mill Maintenance to get Attention at Chicago Show

Maintenance problems in paper mills and paper products plants will get special attention at the Plant Maintenance and Engineering Show that is to be held in Chicago January 25-28. The announcement was made by Clapp & Poliak Inc., producers of the show and of the Plant Maintenance and Engineering Conference that is to run at the same time.

Hundreds of new products, especially useful in the maintenance of paper mills, will be on display at the International Amphitheatre. Two round table conference sessions have been set aside for the exclusive consideration of paper manufacturing problems. Many of the 59 scheduled conference sessions will also be of special interest to the industry. The Conference will be staged at the Hotel Conrad Hilton.

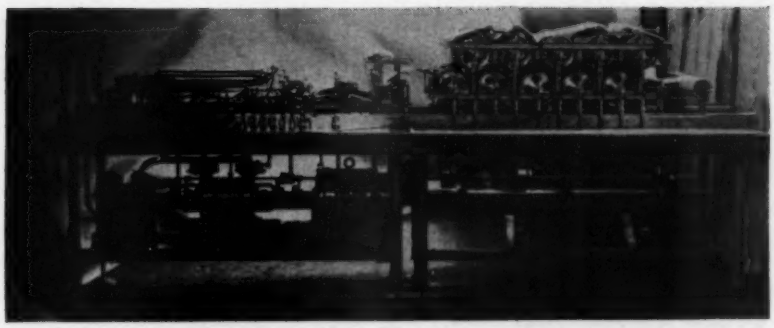
Additional New Brunswick Spraying Planned for '54

Additional forest areas in New Brunswick will be sprayed this spring in the continuing "Battle of the Budworm." This announcement was made by the directors of Forest Protection Ltd.

Two airfields are now under construction and will serve as bases for most of the 1954 operation. The campaign, while extensive, will not cover as much as the record 1,800,000 acres sprayed in 1953 from six airfields. Only a few small patches of the area doused with insecticide last spring will have to be resprayed, so effective was the operation.

The 1954 operation will be concentrated for the most part in the areas of the Northwest and Little Southwest branches of the Miramichi River and on the Nepisiquit watershed.

The four pulp and paper firms that participate in Forest Protection are: Bathurst Power & Paper Co. Ltd., Fraser Companies Ltd., Irving Pulp & Paper Co., and New Brunswick International Paper Co.



P & W MIDGET FOURDRINIER paper machine that has been introduced in the United States by Parsons & Whittemore Inc.; the paper produced has a 9-in. trim width and is of a quality comparable to a full-scale fourdrinier; operating under the same pressure and temperature conditions as the real thing, the midget runs at speeds up to 8 fpm and produces up to 35 lb. per hour; 10' 6" long, 2' 8" wide, and 4' 6" in height, the unit is being used in American mills for experimental purposes

Buying Wood by Weight Advocated at Upper Mississippi FPRS Meeting

THE PROBLEMS AND BENEFITS of buying wood by weight took the spotlight at a recent meeting of the Upper Mississippi Valley Section of the Forest Products Research Society. Ninety members and guests gathered at the Spaulding Hotel in Duluth, Minn., also discussed the current availability and effectiveness of barkers in the area.

That a good deal of preliminary research is necessary to determine weight-price ratios that are suitable to all concerned was the view expressed by Harold Olson of Wood Conversion Co. in Cloquet, Minn. Mr. Olson opened the first technical session with a paper titled, "Buying Wood by Weight." Once these ratios are agreed upon, he declared, buying wood by weight will "almost by magic" eliminate most of the traditional points of friction between buyer and seller.

Pointing out that buying by the cord has always penalized the honest seller while tempting others to load in all the rotten and wormy wood the traffic will bear, Mr. Olson said that the trend is now completely reversed. It isn't worth the haul to truck in light-weight wood. In addition, the seller has an accurate accounting through the weigh slips of exactly what he has delivered.

NEW OWNERS of Whiting & Co. Inc. of Holyoke, Mass., are shown shortly after their purchase of the 25-year-old firm; they are (l to r): J. Wesley Shaw, Jr., company president; Charles Davidson Jr., vice president and general manager, and Robert Belsky, president of Paper Mill Supply Co. of Holyoke

No question on scale

In a short discussion period, Maurice Opsahl of Superior Wood Products Co. in Duluth declared that his company is using the same method, and that "there is never any question on scale." The company scaler sets aside any unusable wood in the load, and this is weighed out with the empty truck.

Ray Jensen of the University of Minnesota commented that the school's weight-volume studies checked out closely with those made by Wood Conversion. He declared that studies had been made to see whether end coatings would help maintain weight when logs were left in the woods. The conclusion was that the only way to maintain weight is to deliver the wood immediately after cutting. Another faculty member at the University of Minnesota, Dr. Frank Kaufert, asked if buying by weight had been tried with jack pine. Mr. Olson revealed that sellers had requested his firm to do this, but that a great deal more research is needed to come up with the proper weight-price ratios. He pointed out that jack pine varies widely in weight and volume, and that Wood Conversion does not feel justified in picking arbitrary price figures.

Debarking discussion

Lee W. Hooker of Michigan College of Mining and Technology at Houghton led the discussion of debarking. In introducing the various panel members, he indicated that much fundamental knowledge about barking remains to be dis-

GIANT ROLL OF KRAFT liner board recently turned out on the new fourdrinier at the Hopewell, Va., plant of Continental Can Co.; used in a Hopewell parade, the roll is trimmed to a record 250-in. width, contains 8½ miles of continuous sheet, and weighs 18 tons

covered, including the mystery of how the bark is attached to the tree. Members of the discussion group included representatives of Soderhamn Machine Co., Nekoosa-Edwards Paper Co., Consolidated Water Power & Paper Co., and Wood Treating Chemicals Corp.

Officers elected at the meeting to serve the section during 1953-54 were: Chairman, William A. Kluender of the Chicago & North Western Ry.; vice chairman, Fred P. Loveland of F. P. Loveland Associates, Chippewa Falls, Wis.; secretary, Ortie LeVoy of Weyerhaeuser Sales Co., St. Paul, and treasurer, Henry Crandall of Mosinee Paper Mills Co., Mosinee, Wis.

Marked Improvement in Swedish Pulp Exports

Svenska Handelsbanken (the Swedish Bank of Trade) has attributed the marked improvement in Swedish pulp exports in recent months to the increased sales to the American market. During the first half of this year, exports to the United States have been three times the 1952 volume.

It was estimated that the total for this year will approximate 300,000 tons, as compared with slightly less than 200,000 in both 1951 and 1952. Total pulp exports—with the exception of viscose cellulose—from January to July were listed at 1,105,000 tons, compared to 825,000 in the same period a year ago. The quantitative increase was accompanied by a considerable drop in value, from 1,040,000,000 krona (about $200,000,000) to 670,000,000 krona (about $130,000,000).

Labor Relations in Paper Industry Praised

The fairness of paper mill officials in labor negotiations was praised by Emil A. Noren October 19 in an address at Wausau, Wis. Mr. Noren is a representative of the International Brotherhood of Papermakers (AFL).

The speaker pointed out that the area which he represents has had only four strikes in the past 18 years, and that the region is extensive, including Wisconsin, Minnesota, upper Michigan, and a small portion of Canada. Mr. Noren commended the fairness of such men as D. C. Everest, chairman of the board of Marathon Corp.; Norman S. Stone, vice president and general manager of Mosinee Paper Mills Co.; David B. Smith, president of Wausau Paper Mills Co., and by implication other executives of mills in the north central area.

"Dealing with these people, there is no chance of getting into trouble," Mr. Noren declared. "We have found no problem yet which we couldn't sit down around the conference table and solve."

K-C Moves Pulpwood Across Lake Superior

Kimberly-Clark Corp.'s Woodlands Department has added to its operations by moving pulpwood from North Star Timber Co. at Grand Marais, Minn., to Munising (Mich.) Paper Co.

There are no river drives on this water route. Self-unloading barges anchored in Lake Superior at Grand Marais pick up and load the logs from trucks. A tug then moves the barges the 300 miles to the Munising harbor. Not only is the water route cost of transportation less than rail would be, but there are no rail facilities immediately available at Grand Marais.

The additional source of pulpwood at Munising supplements its other sources —contracts in Michigan's upper peninsula and some imported wood.

Marathon-Northern Merger Made Official

Articles of merger of Northern Paper Mills of Green Bay with Marathon Corp. of Rothschild, Wis., have been filed in the office of the registrar of deeds for Winnebago County. John Stevens Jr., president, and Edwin N. West, assistant secretary, signed for Marathon, while Milan Boex, president, and C. A. Pertain, secretary, represented Northern. (See THE PAPER INDUSTRY for February 1953, page 1319.)

The merger articles declare that Marathon had outstanding 44,250 shares of 5 per cent cumulative preferred stock of $100 par value and 3,611,262 shares of common stock of no par value. At the time of approval by the respective boards of directors in late October, all Northern stock was owned by Marathon. No change in the Marathon articles of incorporation or in the issuance of stock is required by the merger.

Three Lectures Remain of Lowell Fall Series

Prof. John Lewis, head of the Paper Engineering Department at Lowell Technological Institute in Lowell, Mass., has announced the final three lectures in the department's fall program. The series was arranged by Professor Lewis in cooperation with James R. Carter II, vice president of Nashua Corp. of Nashua, N.H.

The balance of the lecture schedule, which began October 6, is as follows: January 5—"Synthetic Leathers and Cover Papers," Garrison Householder, vice president of Plastic Coating Corp., Holyoke, Mass.; January 12—"Printed Films," Shy Rosen, vice president of Milprint Inc., New York, N.Y., and January 14—"Printing," Richard Page, assistant general superintendent of Courier-Citizen Co., Lowell.

Lake States Firms to Plant 50 Million Trees in 10 Years

Pulp and paper mills in Michigan, Minnesota and Wisconsin have announced that they will plant 5,000,000 trees per year on their own lands during the next decade. According to a forest management inventory recently completed by the Lake States Technical Committee of the American Pulpwood Association, 50,000,000 trees will be planted on 50,300 tax-paying acres.

The report, which was announced by

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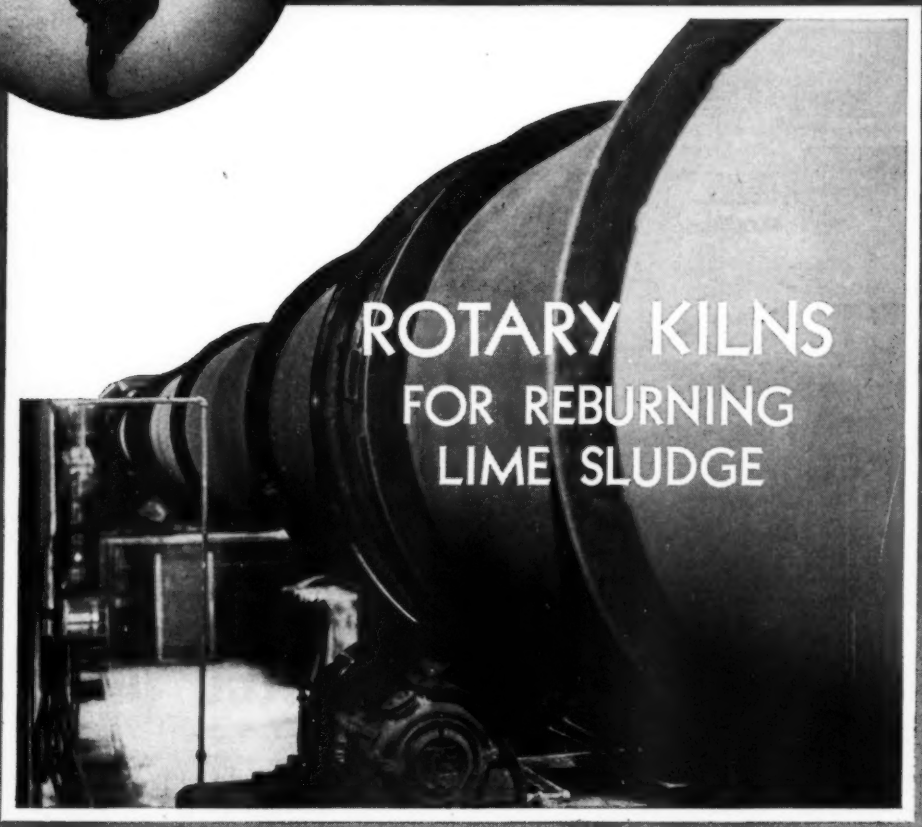

The illustration above shows a modern Smidth rotary kiln for reburning lime sludge at the plant of the Consolidated Paper Corp., Ltd., Three Rivers, Que., Canada.

F. L. Smidth & Co. are specialists in the design and manufacture of rotary kilns and have furnished numerous installations in many countries for burning lime, lime sludge, dolomite, magnesite, cement, ores, etc.

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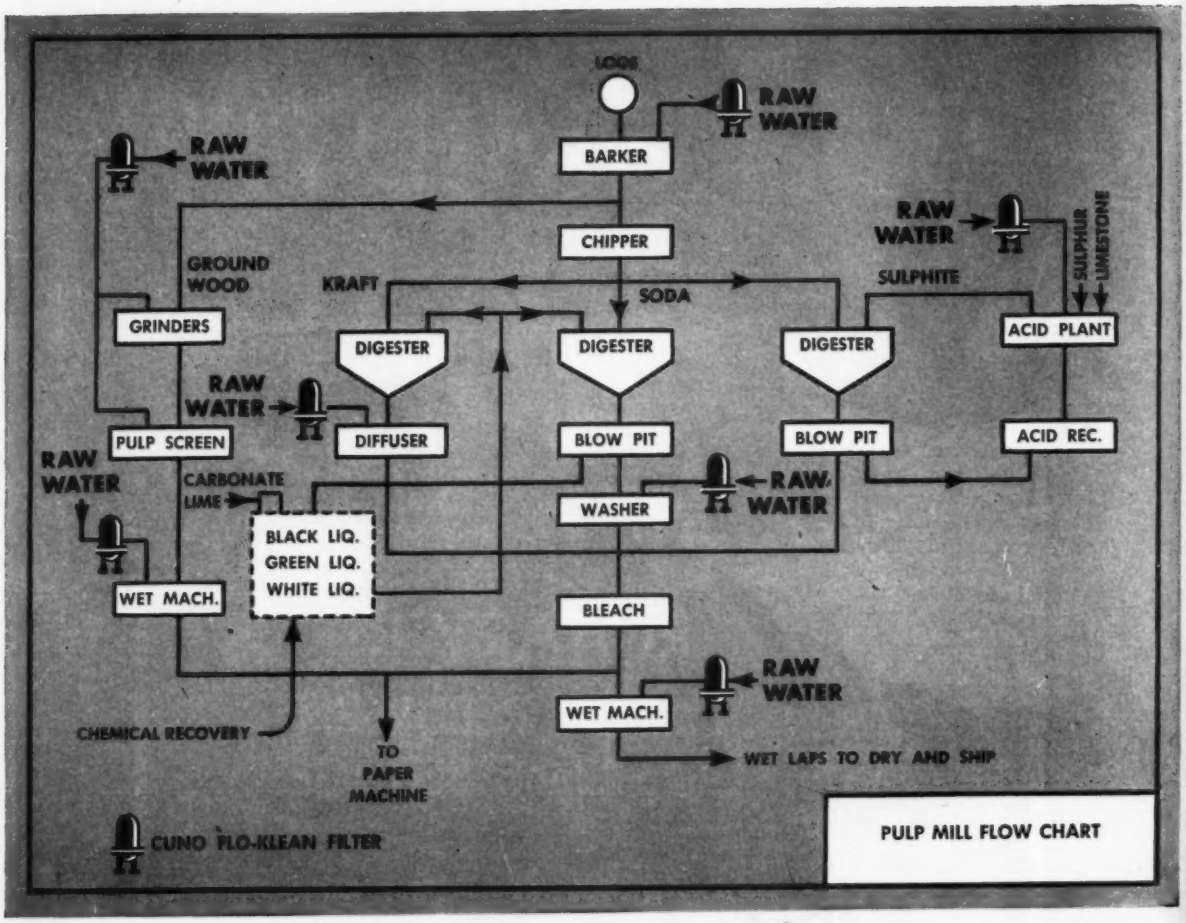


Plan for longer uninterrupted production

When paper and pulp mills have clogged showers or damaged wet felts and Fourdrinier wires, it takes time and money to get going again.

Paper and pulp men have learned from experience that they can avoid costly down-time by installing Cuno FLO-KLEAN filters in their water systems. FLO-KLEAN filters remove harmful solids from river, lake or well water before equipment can be damaged.

You can install a FLO-KLEAN and forget about down-time caused by dirty water. Automatic and continuously self-cleaning, FLO-KLEAN filters are available to handle between 200 and 100,000 gallons of water per minute—with no interruption of flow, and no loss of backwash water. Pressure loss is negligible in this corrosion- and abrasion-resistant unit.

To find out how FLO-KLEAN can protect your equipment and save money write for free FLO-KLEAN bulletin to the Cuno Engineering Corporation, Dept. 394F, Meriden, Conn. F.3.3

CUNO

ENGINEERED FILTRATION

Removes More Sizes of Solids From More Kinds of Fluids

AUTO-KLEAN (disc-type) • MICRO-KLEAN (fibre cartridge) • FLO-KLEAN (wire-wound)

Committee Chairman Bruce G. Buell of the Northern Paper Mills Division of Marathon Corp., is the first of several that the association requested from various regional groups this summer. Thirty-four pulp mills were covered in the Lake States report.

Firms reporting tree-planting plans for the 10-year period account for 90 per cent of the pulpwood consumption in the three Lake States. Planting projects outlined by the reporting firms will more than double company-owned acreage on which trees have been planted since 1926.

Along with the increased tree-planting tempo in the Lake States, the survey revealed a striking increase in the number of forestry personnel employed in woodlands management. In 1945, only 15 of the 34 pulp companies covered employed forest management personnel. Their forestry employees at that time totaled 50.

Today, according to the survey, 26 of the 34 firms have 121 men employed in forest management capacities. Last year, the reporting companies spent $423,000 on forest management, an average of 27 cents per acre. Seven years earlier, the outlay by the same companies for forest management was $163,850, or 15 cents an acre.

Sulfur Production Now Meeting Demand

Production of sulfur along the Gulf Coast—the free world's major source—is being maintained at a rate sufficient to meet practically all current demands. This view was expressed recently by Thomas R. Vaughan, vice president and director of sales for Freeport Sulphur Co., in an article in the *New York Journal of Commerce.*

The current supply-demand situation is in marked contrast to the earlier shortage that led to rigid use and inventory controls by the government in 1951 and 1952.

The industry, however, is still "not completely out of the woods," Mr. Vaughan reported. Despite the high rate of production, producers had to draw partially upon stock of mined sulfur during the first half of 1953 in order to meet the needs of industry and agriculture.

Demand for sulfur shows every sign of increasing. Because of its widespread use in the production of so many products, consumption has always been closely related to the general level of industrial activity. Historically, the rate of consumption has increased over the years by an average of 3 to 3½ per cent.

Lockport Felt to Build Plant in Mississippi

Lockport Felt Co. of Newfane, N.Y., will construct a plant at Starkville, Miss. According to company officials, the project is "in keeping with the enormous expansion of the manufacture of pulp, paper and paperboard in the South." The plant will serve Lockport customers from Maryland through Texas.

Construction is expected to start as soon as certain routine official agreements, etc., can be executed. Major operations will be continued in Newfane.

Allied Personalities in This Month's News

R. C. Dempsey
A. E. Staley

Roy W. Keller
F. C. Huyck & Sons

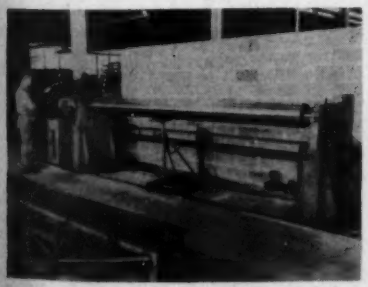
E. H. Parduhn
The Oilgear Co.

D. A. Elert
William Powell

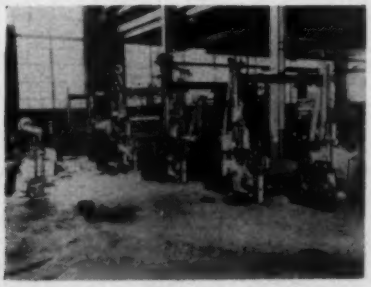
A. E. Staley Mfg. Co. has appointed Richard C. Dempsey as a technical sales representative to the paper industry in New England. He was formerly with Whiting Paper Co. in Holyoke, Mass. ... George W. Curtis, Milwaukee division sales manager of *The Timken Roller Bearing Co.*, has announced his retirement. ... *F. C. Huyck & Sons*, Rensselaer, N.Y., wringer felt manufacturer, has named Roy W. Keller as West Coast representative. He was formerly

Cameron Machine Opens New Jersey Plant

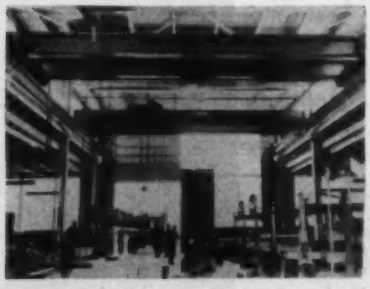
RIGHT: Cameron Machine Co.'s new plant at Dover, N. J., for the manufacture of slitting and roll winding machines



NEW ROLL balancing machine at the Cameron plant; it is capable of handling the massive rolls used in the Imperial winders



FIVE Camachine type 10 winders on the assembly line; Dover will eventually be the shipping point for all Cameron winders



TWO TEN-TON cranes, running the entire length of the high center bay, being used to load crated paper machine winder

with Crown Zellerbach Corp. . . . *General Dyestuff Corp.* has named Grant A. Sharpe as sales representative to serve the paper industry in upper New York State. . . . E. H. Parduhn has been appointed district engineering representative for *The Oilgear Co.* in the Pacific Northwest.

Allied Notes

American Cyanamid Co.
has awarded a contract to the Chemical Plants Division of Blaw-Knox Co. to engineer and furnish a processing unit for purification of solvents such as methanol by distillation at Cyanamid's Wallingford, Conn., plant. The new unit will manufacture solvents used in paper resins.

Allis-Chalmers Mfg. Co.
of Milwaukee has officially assumed operation of the Buda Co., Harvey, Ill., manufacturer of fork lift trucks, towing tractors, gasoline engines, earth-boring machines, etc.

Hooker Electrochemical Co.
announces that it will start shipping liquid caustic soda and liquid chlorine from its new plant at Montague, Mich., January 1. Standard grade liquid caustic soda in 50 and 73 per cent strengths will be available by tank car, as well as barge shipments of 50 per cent from Montague.

BIANNUAL SALES conference of Cuno Engineering Corp. was held this fall at Pine Orchard, Conn.; keynote speaker was Edwin J. Schwanhausser, executive vice president of Worthington Corp.; shown during the meeting are (l to r): Bruce Edmands, Connecticut representative; Harold Munday, Chicago; Carlton H. Winslow, toastmaster; Mr. Schwanhausser; James E. Duff, Cuno eastern sales manager; Lou Cercone, Buffalo representative; Murray McConnell, Cuno president, and Roy Scott, vice president

Lodding Engineering Corp.
has expanded its research and development program in order to better serve the paper industry. The program is under the direction of F. H. Goyette, chief engineer. Additional equipment is now being installed.

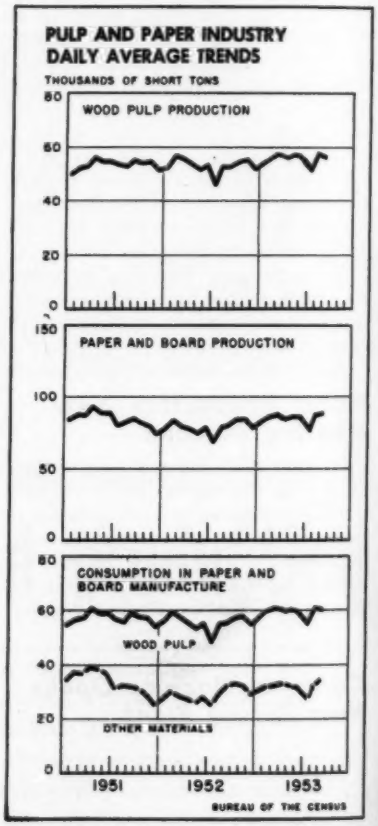
U. S. Paper and Paperboard Production

	Sept. 1953 (tons)	Aug. 1953 (tons)	Sept. 1952 (tons)	Total 1952 (1,000 tons)	Total 1947 (1,000 tons)
Paper and Board, total	2,232,933	2,298,219	2,027,431	24,423	21,102
Paper, total	938,875	959,669	845,449	10,898	10,693
Newsprint	85,339	90,981	89,016	1,109	833
Groundwood paper (uncoated)	65,719	66,751	62,997	806	821
Printing and converting (coated)	95,493	100,230	80,794	1,096	
Book paper (uncoated)	133,469	141,465	113,130	1,482	2,208
Fine paper (writing, cover and text, bristols, thin paper and other)	108,240	108,168	100,268	1,295	1,172
Coarse paper (unbleached, kraft, glassine, greaseproof, vegetable parchment and other)	283,163	286,756	245,051	3,238	2,903
Special industrial paper	34,783	32,234	32,188	396	289
Sanitary tissue stock	102,873	102,276	94,675	1,148	894
Tissue paper	19,902	19,791	18,315	209	195
Absorbent paper	9,894	11,017	9,015	118	100
Paperboard, total	1,049,280	1,087,053	928,797	10,772	9,187
Containerboard, total	569,587	602,535	492,940	5,766	4,943
Liners	383,782	406,865	337,251	3,902	3,293
Corrugating material	160,260	166,666	132,503	1,583	1,370
Container chipboard	25,545	29,004	23,186	282	280
Bending board	303,467	314,910	273,323	3,144	2,249
Non-bending board	87,789	84,533	70,548	783	595
Special paperboard stock	81,912	78,697	85,877	1,009	1,307
Cardboard	6,525	6,378	6,109	69	92
Wet machine board	12,787	12,960	12,104	139	150
Construction paper and board, total	231,991	238,537	241,081	2,614	2,349
Construction paper	125,110	121,878	123,366	1,299	1,277
Hardboard and insulating board	106,881	116,659	117,715	1,315	1,072

Source: U. S. Department of Commerce.

September Pulp, Paper and Board Production

Paper and board production during September amounted to 2,232,933 tons, according to a report recently released by the Bureau of the Census. This is an approximate 10 per cent increase over the tonnage of 2,027,431 produced in September a year ago. The output of paperboard grades during the month, amounting to 1,049,280 tons, reflected an increase of 13 per cent over the production of 928,797 tons reported during September 1952. Paper production, amounting to 938,875 tons, registered an 11 per cent increase from the 845,449 tons produced in September a year ago.



Pulpwood receipts at the pulp mills during September amounted to 2,494,182 cords, with consumption at 2,305,823 cords. Month-end inventories increased about 4 per cent to 5,627,519 cords.

Wood pulp production during September amounted to 1,420,070 tons, as compared to 1,315,168 tons produced in September a year ago.

Wood pulp inventories at the end of September at the paper and board mills amounted to 517,752 tons, showing a small decline during the month. Month-end stocks at the pulp mills were 147,121 tons, 7 per cent lower than the 158,827 tons reported at the end of August.

WATER COLOR PAINTING BY L. J. A. NEESE

SPACIOUS ERECTION FLOOR at Beloit Iron Works is part of the expansion program which has speeded delivery of paper machinery. The high craneway, with three traveling cranes, simplifies assembly and shipment of heavy equipment for leading paper producers. Shown above is a Beloit Vacuum Transfer type press section custom designed for an ultra-modern newsprint mill.

The Paper Industry Association News

Strawboard Properties Examined at Tappi Conference

CRUSH RESISTANCE and other strength properties of strawboard took the spotlight in technical sessions held during the 10th Annual Tappi Fall Conference on Fibrous Agricultural Residues. The gathering was at the Quinte Hotel in Belleville, Ont. General chairman of the meetings was Dr. S. I. Aronovsky of the Northern Regional Research Laboratory at Peoria, Ill. Dr. Aronovsky is chairman of the Tappi Fibrous Agricultural Residues Committee.

About 35 delegates from the United States and Canada attended the meeting, which was held at Belleville as a result of an invitation from the Hinde & Dauch Paper Co. of Canada Ltd., which operates the only strawboard mill in Canada at nearby Trenton. W. H. Palm, vice president of Hinde & Dauch was the local chairman.

Meeting modern competition

The technical session was opened by Dr. R. G. Macdonald, national secretary-treasurer of Tappi, who discussed "Tappi and the Strawboard Industry." New committees are constantly being formed, he said, to keep up with newer developments in the industry. Tappi sponsors many research projects and has special interest in the fibrous agricultural residues because of the large potential source of raw material for the paper industry in this field.

Changes that are taking place to meet present-day competition from other corrugating media were described by E. R. Carpenter, technical director of the Terre Haute (Ind.) Division of Weston Paper & Mfg. Co. A comprehensive cooperative study has been recently undertaken at the Northern Regional Research Laboratory, where more than 80 different straw pulping formulas were checked, he said. Working from these results, Weston made a number of changes in its operations and techniques and was able to upgrade its strawboard corrugating medium to produce a finished box as good as any on the market today.

The round table discussion on "Crush Resistance and Other Strength Properties of Strawboard Corrugating" was based on a list of 23 questions obtained from a canvas of the strawboard industry. Dr. Aronovsky pointed out that straw contains a higher pentosan content than wood and most of the other natural fibers; and, if we assume that the hemi-celluloses are mainly responsible for the stiffness of corrugating paper, straw should be the best material from which to prepare such paper. However, more research work is necessary to determine how best to bring out this superior potential of straw for corrugating manufacture.

V. E. Bush, manager of the Hinde & Dauch strawboard mill at Ft. Madison, Iowa, stated that it is in the best interest of the country's economy to use more of the abundant annual fibrous agricultural residues to supplement the dwindling wood resources.

Mill tour

At the close of the meeting, Mr. Palm described the Hinde & Dauch mill at Trenton, with special emphasis on the Va-Purge process. He pointed out that, since the Va-Purge symposium sponsored by the CPPA Technical Section, further improvements have been made in the process.

The cooking cycle has been reduced, and an additional 10 per cent improvement in stiffness has been achieved. The Va-Purge process has resulted in improved strawboard quality and in increased production at lower costs.

It was announced that the Fibrous Agricultural Residues Committee will meet February 15 at the Commodore Hotel in New York, N. Y., as part of the annual general Tappi meeting.

Continuous Processes Finds Favor in Europe: Nadelman

Improvements in various facets of papermaking are being made at a rapid rate by the industry in Europe, according to Dr. Alfred H. Nadelman, head of the paper technology curriculum at Western Michigan College. In a talk before the Michigan Division of the Superintendents Association at Kalamazoo, he described his recent tour through Canada and several European countries.

Dr. Nadelman declared that he was amazed at the changes that the European industry is making toward the development of continuous processes in pulping, deinking, etc., and in the continuous battle it is waging for papermaking fiber.

PRESENTATION of Fred C. Boyce Student Award is made to Leonard Timer (1) by Glen Sutton, past association president

A feature of the program was the award of the annual Fred C. Boyce Student Award check to Leonard Timmer, a Western Michigan Student. The presentation was made by Glen Sutton, past president of the Superintendents Association.

Packaging Needs Outlined at Chicago Tappi

Packaging is primarily a service function to manufacturers, and packaging suppliers should pattern their operations after some of the better service organizations set up by large manufacturers.

This view was expressed October 19 by Val Bauman, general advertising manager of National Tea Co., as he addressed the Chicago Section of Tappi. The meeting was in charge of Ed C. Berg of Ace Carton Corp., chairman of the section.

Mr. Bauman outlined the three functions that the outer shipping container must serve: (1) it must transport the product to the point of sale; (2) it must have a display value, and (3) it should have a "carry-out" value, since so many times cartons are used by super markets for transporting purchases to the customer's car. He suggested that perhaps shipping containers might have a die-

"WOLMANIZED*"... pressure-treated lumber with no added fire hazard... actually lower in flamespread rate than untreated wood.

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PRESSURE TREATED **Lumber**

Stops Rot and Termites

PARTICIPANTS IN Chicago Tappi program were (l to r) Charles Krebs, program chairman; Ed C. Berg, section chairman; Val Bauman of National Tea, and Jim Johnson, vice chairman

cut handle that could be pulled out for this purpose.

The speaker stressed the advertising value of the container and declared that identification could be placed on the box to aid at the warehousing level. Simplicity of design is important, Mr. Bauman added, and bright colors are vital to good modern merchandising.

Exhibiting a pound of butter with squares first wrapped in a wax paper and then overwrapped with parchment, Mr. Bauman inquired as to why it is necessary for the butter manufacturers to use this type of packing for a product that retails at 89 cents. On the other hand, he pointed out, a margarine producer puts out a foil-wrapped product with a foil-laminated carton in an attractive design for a 29-cent product.

Waste Paper Utilization Topic of Metropolitan Tappi

Problems involved in waste paper utilization were discussed at the October meeting of the Metropolitan District of the Empire State Section of Tappi. The gathering, which was held in New York City, featured Henry Perry, executive-secretary of the Waste Paper Utilization Council, Fred Goodwill, assistant to the vice president in charge of operations for St. Regis Paper Co., and Henry Booth of Robert Gair Co. Inc.'s technical staff.

That the quality of waste paper is improving was the view expressed by Mr. Goodwill. He noted that this has come about since the dealers have realized the need of eliminating unwanted materials. He also described various deinking methods, with particular reference to the use of a batch method to replace the continuous method.

Mr. Booth described a possible method for using low-grade waste in a paper board mill. This involves a series of cleaning, refining, and separating steps, with the clean material going into the top liner and the rejects into the filler. After removing the dirt, both the top liner and filler stocks could be cooked, washed and bleached to remove the ink. Although this system would be expensive to install, it should give good results with any type of waste paper.

Flexographic printing was the discus-

sion topic at the Metropolitan District's November meeting. Speakers included Robert K. Zuckerman, manager of the New York office of Kidder Press Co.; John LaCraw, plant superintendent for Mosstype Corp., and Col. Joseph W. Viner, vice president of the Printing Ink Division of Interchemical Corp.

Statistical Quality Control Called Powerful Tool to Business

Richard T. Trelfa, technical director of Watervliet Paper Co. at Watervliet, Mich., declared in an address before the Michigan Division of the Superintendents Association that "statistical techniques and understanding of such techniques are powerful tools in the hands of a trained man."

Speaking at the group's September meeting at the Hotel Harris, Kalamazoo, he said that "the trained man should have not only a clear-cut understanding of the process involved, but should also have a good background on statistical methods." He added that statistical quality control is in order only when a problem is too complex for common sense to apply.

During the meeting a past chairman's certificate was presented by the national association to Harvey Hartman of American Box Board Co., Grand Rapids. The award was made by Richard H. Peeters of St. Regis Paper Co., Kalamazoo.

Progressive Methods Key to European Development

European mills are quite active in the development of new processes in the field of pulping, using new raw materials to reduce pulp costs. This was the view expressed by Dr. K. A. Arnold, technical director for St. Regis Paper Co., as he addressed a recent meeting of the Northern District of the Empire State Section of Tappi. The gathering was in Watertown, N.Y.

Dr. Arnold presented a summary of his observations gleaned during a recent tour of pulp and paper mills in seven European countries. He declared that due to a shortage of timber on the Continent and in Great Britain a majority of wood pulp is imported from Scandinavia.

The speaker briefly described the operation of a mill in Nanterre, France, where straw is pulped with the use of a soda liquor. Turning to England, Dr. Arnold reported that there has been considerable development there of high-yield processes applied to hardwoods, along with improvements in hardboard production.

Dr. Arnold made the following observations based on his European tour: (1) The paper industry in Europe is suffering from a temporary recession—

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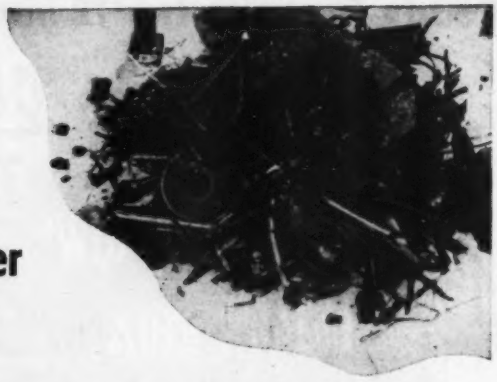

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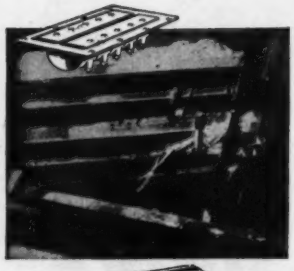
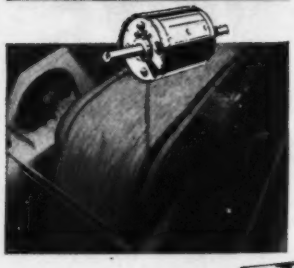
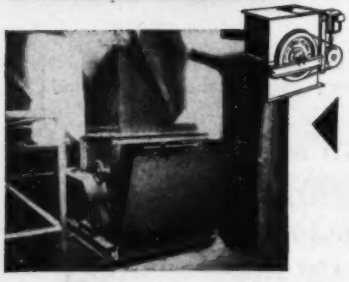


THE junk above is an actual tramp iron accumulation removed by a Dings Magnet installed in a Wisconsin paper mill . . . a rough diet for pumps, screens, defibrators and other equipment.



Look at the iron on this Dings Perma-Plate—a powerful non-electric magnet that can be installed in chutes, ducts, or above belts to remove iron from wood chips. Magnetic Permanence guaranteed forever. Engineering data in Catalog C-1205-A, write for it.



Fully automatic iron removal with a Dings Magnetic Pulley — used here as the head pulley on a chip belt. Iron is discharged separately from chips. Dings Pulleys are unbeatable for power, economy. Write for construction details, capacities.

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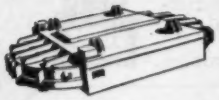

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with the possible exception of Belgium; (2) price of creped kraft is generally 15 per cent higher than flat kraft; (3) increased competition is producing a marked trend of general interest toward kraft specialty papers, and (4) there is considerable basic research in all phases of the pulp and paper industry.

The 1954 Fall Meeting

of the New York-Canadian Division of the Superintendents Association will be held September 2-4 at the Saranac Inn in Upper Saranac Lake, N.Y.

Lawrence F. Whittemore,

president of Brown Co. of Berlin, N. H., will address the January 15 dinner meeting of the Connecticut Valley Division of the Superintendents Association. The gathering will be at the Roger Smith Hotel, Holyoke, Mass.

Coming Events

TAPPI meetings

Jan. 12—Lake States Section, Conway Hotel, Appleton, Wis.
Jan. 12—Ohio Section, American Legion Hall, Middletown, Ohio.
Jan. 19—Pacific Section, Everett, Wash.
Jan. 22—Southeastern Section, Hotel Dempsey, Macon, Ga.
Jan. 28—Delaware Valley Section, Engineers' Club, Philadelhpia
Feb. 11—Ohio Section, Manchester Hotel, Middletown, Ohio.
Feb. 15-18—39th Annual Meeting, Commodore Hotel, New York, N. Y.
March 9—Lake States Section, Wausau Club, Wausau, Wis.
March 9—Ohio Section, Manchester Hotel, Middletown, Ohio.
March 19—Pacific Section, West Linn, Ore.
March 19—Southeastern Section, George Washington Hotel, Jacksonville, Fla.
March 25—Delaware Valley Section, Engineers' Club, Philadelphia

American Pulp & Paper Mill Superintendents Association meetings

Jan. 15—Connecticut Valley Division, Roger Smith Hotel, Holyoke, Mass.
Jan. 26—Miami Valley Division, American Legion Hall, Middletown, Ohio
Feb. 25—Miami Valley Division, American Legion Hall, Middletown, Ohio
March 25—Miami Valley Division, American Legion Hall, Middletown, Ohio

Other meetings

Jan. 25-28—Plant Maintenance & Engineering Show and Conference, International Amphitheater and Conrad Hilton Hotel, Chicago
Jan. 27-29—CPPA Technical Section, annual meeting, Sheraton-Mount Royal Hotel, Montreal

The Paper Industry Names in the News

William Roberts

Dr. H. P. Dixson

Oberweiser Named Board Chairman at Fox River

E. A. OBERWEISER, a veteran of 45 years in the paper industry, has been named chairman of the board of Fox River Paper Corp., Appleton, Wis.

At the same time, *WILLIAM ROBERTS* was elected president of the firm to succeed Mr. Oberweiser. He has been in charge of manufacturing since 1944. *DR. H. P. DIXSON*, technical director since 1943, was named vice president in charge of manufacturing. He succeeds Mr. Roberts.

The appointment of *H. O. BARNEY* as comptroller and *K. V. WHITE* as director of accounting were also announced. Mr. Barney has been purchasing agent and cost department manager and will continue as purchasing agent. Mr. White will continue in his position as office manager in addition to his new duties.

Mr. Oberweiser organized Whiting-Plover Paper Co. in 1908 and was president of that firm when he resigned in 1938 to assume the Fox River presidency.

Navy Veteran Appointed Green Bay P&P Treasurer

ELMER L. CARLSON has been named treasurer of Green Bay Paper & Pulp Co. and of Green Bay Box Co., according to an announcement by George Kress, president of both firms.

Mr. Carlson recently retired with the rank of captain in the U. S. Navy after 45 years' service in the armed forces. He served with the Atlantic Fleet during World War I and was executive officer of the Naval Air Station at Montauk, N. Y. As a reservist he aided in the establishment of the Navy's V-7 program, and in World War II he was commanding officer of the navy base at Oran, North Africa, later becoming advance base officer of the 12th Naval District in San Francisco. He received a promotion to the rank of captain in 1945. Mr. Carlson's most recent assignment was the establishment and command of the technical training center in Chicago for advanced aviation maintenance.

Long associated with banking, Mr. Carlson entered the employ of the Continental Bank in Chicago at the age of 16. He was later a member of the staffs of the Lake View Trust & Savings Bank and the Foreman State-National Bank, of which he was assistant vice president in 1932. Because of his knowledge of industrial finance, he was chosen as a member of National Credit Corp.

E. L. Carlson

T. A. Wark

Woodward Succeeds Wark at St. Regis Minnesota Mill

St. Regis Paper Co. has announced the appointment of *WILLIAM S. WOODWARD* as resident manager of the firm's paper mill at Sartell, Minn. He succeeds *THOMAS A. WARK*, whose retirement became effective October 31.

Mr. Woodward joined Watab Paper Co. in Sartell in 1933 (the mill was purchased by St. Regis in 1945). He served in the military forces in World War II and returned to Watab at Little Falls. He rejoined the Sartell staff last September.

Mr. Wark, who spent more than 50 years in the industry, will continue to serve St. Regis in an advisory capacity. He has been associated with more than a dozen of the leading paper manufacturers throughout the United States and Canada, as well as with one Norwegian firm. From 1931 to 1935, Mr. Wark was general manager of St. Regis mills in northern New York State. He joined Watab in 1936 and again became associated with St. Regis when it acquired Watab in 1945. Since that time, he has served as general manager.

Dr. Stamm Elected to ACS Chairmanship

DR. ALFRED J. STAMM of the U. S. Forest Products Laboratory at Madison, Wis., has been elected chairman of the American Chemical Society's Division of Cellulose Chemistry for 1954. He succeeds Dr. Kyle Ward Jr., head of the cellulose group at the Institute of Paper Chemistry in Appleton.

Named chairman-elect was *E. D. KLUG*, research chemist for Hercules Powder Co., Wilmington, Del.

Dr. Stamm has been associated with the Forest Products Laboratory since 1925. He is credited with 12 patents and is the author or co-author of two books and approximately 100 publications covering the fields of physical and colloid chemistry and physics and relating to products derived from wood.

A doctoral graduate of the University of Wisconsin, Dr. Stamm was a Rockefeller Foundation Fellow in Upsala, Sweden, in 1928 and 1929 and served as a delegate to the International Forestry Convention in Stockholm in 1929. He has been a member of the subcommittee on plant products of the National Research Council. In 1934 Dr. Stamm was elected chairman of the ACS Colloid Division, and in 1936 he served as chairman of the society's Wisconsin section.

Noel A. Pease

O. R. Tindall

Continental Can Promotions

NOEL A. PEASE has been named manager of manufacturing for the fiber drum plants of Continental Can Co.'s Fibre Drum Division. He joined the firm in 1928 and held numerous positions at the Van Wert, Ohio, plant before becoming manager of the St. Louis fiber drum plant in 1949. In his new position, he will headquarter at Van Wert.

Succeeding Mr. Pease at St. Louis is

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Garlock combines these two products by impregnating each strand of LATTICE BRAID asbestos packing with Teflon suspensoid. The result is a sturdy braided asbestos packing with a heavy, thoroughly distributed Teflon impregnation which is unaffected by the liquid being handled. This long-life packing has a low coefficient of friction, is non-corrosive and non-contaminating.

LATTICE BRAID with Teflon is available in either Canadian white asbestos (Style 5861) or blue African asbestos (Style 5880). Garlock also manufactures all-Teflon LATTICE BRAID packing, plastic packings of shredded Teflon, and other Teflon products.

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FIFTY-FIVE veteran employees of Crystal Tissue Co. and Crystal Waxing Co. were recently honored at the first annual Crystal Quarter-Century Club banquet; all received the first Service Award Emblems, which are to be presented for continuous service of five years or more; George A. Popp (l), service and traffic manager, was the only 45-year veteran, having started in the finishing department of Tissue in 1908; he is shown as he received his emblem from E. E. Grant, president of the firm

ORA R. TINDALL. He joined Continental in 1936 and prior to his present appointment served the firm in various supervisory capacities at Van Wert.

Rayonier Appoints Two in Georgia, Florida

The appointment of *B. W. HASKELL* as resident engineer of the Fernandina Division of Rayonier Inc. at Fernandina Beach, Fla., was announced recently by Fred B. Doherty, divisional resident manager.

At the same time, *WILLIAM C. RINDSLAND* was named resident engineer of the plant at Jesup, Ga.

Mr. Haskell joined Rayonier in 1946 as staff engineer. Prior to that time he was employed by General Electric Co. Mr. Rindsland has been associated with Rayonier as resident engineer at Fernandina since 1952. His career includes experience as a professor in the college of engineering at the University of Minnesota, in addition to wide experience as an engineer with Minnesota & Ontario Paper Co. at International Falls, Minn.

Changes at Marinette

Organizational changes creating new divisional responsibility in the paper mill and finishing department have been announced by Marinette Paper Co., Wisconsin subsidiary of Scott Paper Co.

EARL BOVEE and *MORRIS TEIGE* have been named finishing division managers. *ARTHUR BELAIRE* and *CYRIL DOWNHAM* have been assigned to paper mill division managerial posts. *ROBERT HOLQUIST* has been promoted to finishing shift supervisor. *GEORGE COLLIER* has been named head adjuster, succeeding *MARK LaPOINTE*, who recently was sent to the

Everett, Wash., mill of Scott as finishing maintenance manager. Another change sends *ALLAN KENERSON*, assistant finishing supervisor at Marinette, to Everett as a member of the new finishing plant's supervisory staff.

Nicholson to Receive Tappi Award at February Meeting

G. W. E. NICHOLSON, executive vice president of Union Bag & Paper Corp., will be awarded the 1953 Tappi Medal. Formal presentation will be made in February during the national Tappi meeting in New York, N. Y.

Mr. Nicholson, who is in charge of manufacturing operations at Union Bag, has been a member of Tappi for many years and served as its president in 1946. He served as resident manager of Union Bag's Savannah, Ga., plant from 1941 to 1945, at which time he was named vice president in charge of manufacturing at all company plants, with headquarters in New York, and has since been given the post of executive vice president.

The medal is awarded each year to the man "whose achievements have definitely contributed to the technical progress of the pulp, paper and paperboard industry."

G. W. E. Nicholson

Paul Roberts

PAUL E. ROBERTS has been appointed vice president and general manager of Alaska Pine & Cellulose Ltd. Mr. Roberts was previously manager of new developments for Abitibi Powers & Paper Co. Ltd., which has a 50 per cent interest in the West Coast lumber and dissolving pulp operation.

Den Dooven Heads New Marathon Division

EDWARD E. DEN DOOVEN has been named manager of the Northern Paper Mills Division of Marathon Corp. at Green Bay, Wis. (Northern and Marathon were merged several months ago.)

For the last seven years, Mr. Den Dooven has been general superintendent for Northern. In that capacity, he was chief manufacturing aide to Milan Boex, who was Northern president and general manager and is now a Marathon vice president and director.

With 26 years' experience in the

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CHLORINE — Investigate our liquid chlorine for bleaching and bleaching compounds, for direct chlorination of wood and waste paper pulps and for water treatment. Tested shipping methods assure safe delivery and trouble-free operation in your plant.

KREELON* — Wyandotte's alkylarylsulfonate is highly soluble; gives fast, effective wetting; increases absorbency of tissue and blotting paper. In proper formulation KREELON is particularly effective in deinking operations where peroxide bleach is prepared.

PLURONICS* — Mill evaluations show that PLURONIC F68, the only 100%-active flake nonionic surfactant, improves absorbency and softness of paper towels. It is an excellent paper softener, with a minimum reduction in strength. PLURONIC F68 with sulfamic acid is excellent for washing felts . . . increases felt-life as much as 100%.

PURECAL* — Wyandotte's ultra-white precipitated calcium carbonate is exceptionally uniform in quality and particle size, free of grit and abrasives, readily and easily dispersed. PURECAL produces a smooth coating of high whiteness, good hiding power, and excellent inking qualities.

CARBOSE* — CARBOSE I, added to the beater aids in deflocculation of the pulp resulting in better sheet formation. CARBOSE VL, applied at the calender stack to patent-coated board, improves grease resistance resulting in improved gloss of ink . . . when applied at the calender stack in the manufacture of jute liner, it results in an increase of 5-20% in Mullen strength.

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Wyandotte CHEMICALS

paper industry, Mr. Den Dooven will integrate Northern manufacturing operations into those of Marathon. He is a native of Green Bay and has spent his entire professional life in the paper industry after his graduation from the University of Wisconsin.

Edw. Den Dooven

Donald Lichty

Lichty Named Nepco Controller

DONALD LICHTY has been named controller of Nekoosa-Edwards Paper Co., Port Edwards, Wis. A graduate of the commerce school of the University of Iowa, he joined the firm in 1933 in the technical department.

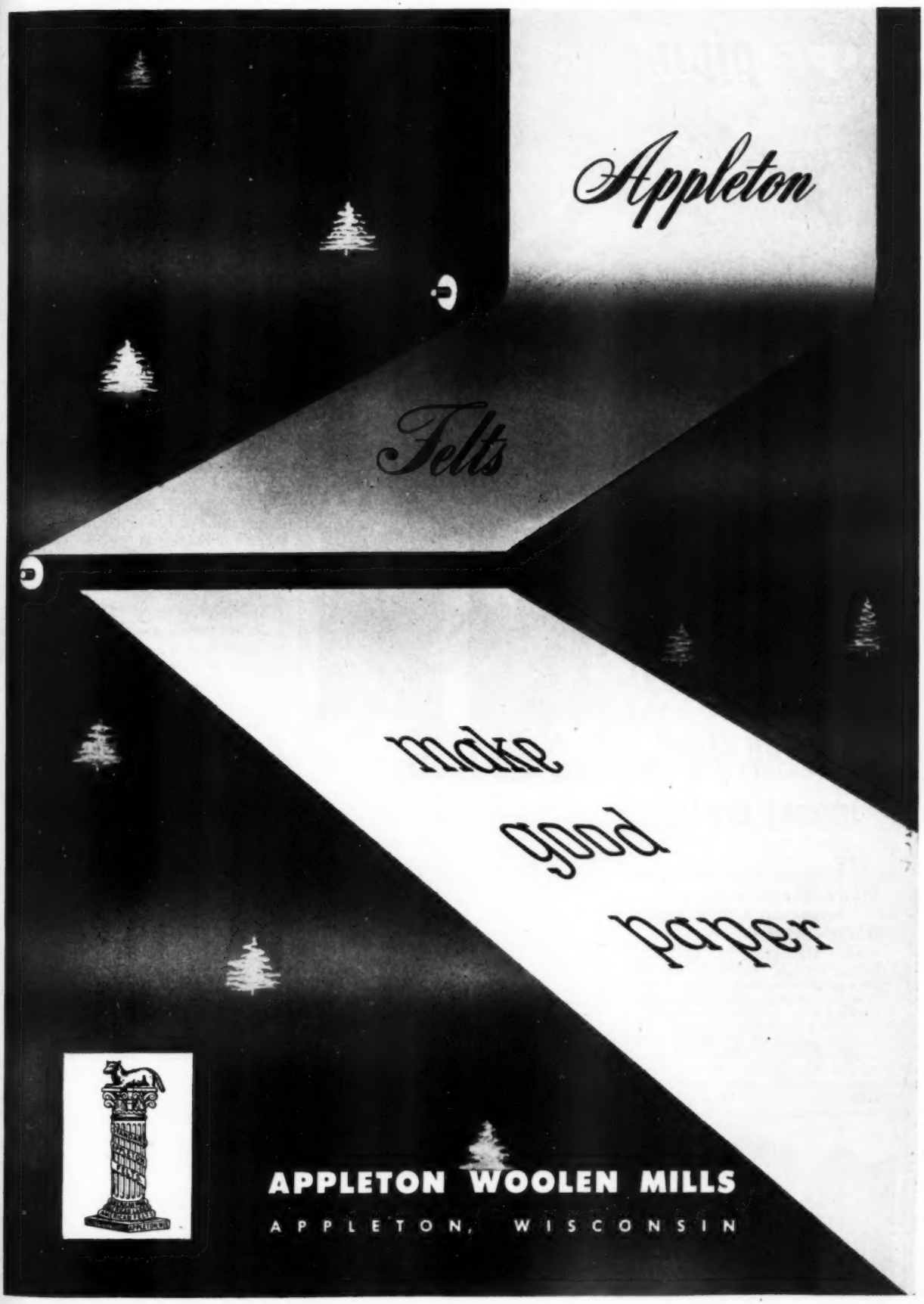
He later transferred to the standards department at its inception and established the foundation for a standard cost system coordinated with the accounting division. In addition to being in charge of mill accounting and costs, Mr. Lichty was active in the organization of Nepco's Canadian subsidiary, Alexander-Clark Timber Co., of which he is treasurer.

In other Nepco appointments, *VERNON IVERSON* has been made technical control supervisor of the Nekoosa mill; succeeding Mr. Iverson as development supervisor in the central lab is *EDWARD NISSEN*. Mr. Iverson's new position entails quality control work in both pulp and paper mills at Nekoosa, mill investigations and trouble-shooting, as well as supervision of experimental pulping and bleaching.

DAVID M. PINEO has retired after 23 years' service as superintendent of the electrical department of New Brunswick International Paper Co. at Dalhousie. He is to be succeeded by *KIRK PRITTIE*, for some years assistant electrical superintendent.

PETER RASMUSSEN, maintenance coordinator for Kimberly-Clark Corp., has retired after 28 years of service with the firm.

EDGAR C. SHERMAN has resigned his post as technical superintendent of the Crown Zellerbach Corp. mill in Port Townsend, Wash. He becomes operating superintendent of the Howe Sound Pulp Co. mill in Port Mellon, B.C.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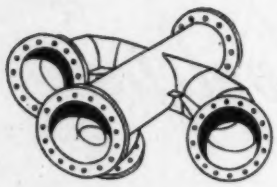

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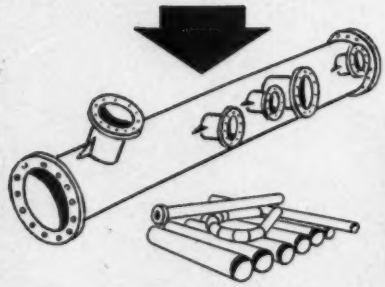

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The Paper Industry Necrology

Ralph D. Main

Ralph D. Main, an executive officer of Minnesota & Ontario Paper Co. since 1941, died November 13 in his Minneapolis home.

Mr. Main first became associated with Mando in 1919 as a chartered accountant. He joined the firm officially two years later. From 1941 to 1949 he served as secretary-treasurer and from 1949 to 1951 as treasurer. He was named a vice president in 1951. A native of Glasgow, Scotland, he attended the University of Glasgow and was a member of the Society of Accountants and Actuaries of Scotland.

R. D. Main

H. G. Boon

H. G. Boon

Henry G. Boon, 60, Kimberly-Clark Corp. director and vice president of industrial and public relations, died November 10 at Neenah, Wis.

A native of Hortonville, Mr. Boon attended Lawrence College and in 1914 joined K-C as a research laboratory assistant. He became head of the lab in 1919 and later was transferred to the Kimberly mill's testing department. In 1920 he was sent to Niagara Falls, N. Y., to direct the technical and statistical department of the firm's new mill. Within three years he was named assistant superintendent.

Mr. Boon returned to Neenah in 1925 as assistant superintendent of the Badger-Globe mill. Within a year he was assigned to Kimberly as the first mill manager but was soon recalled to Neenah to become chief of staff and general superintendent. He was elected a director in 1938 and seven years later became a vice president and member of the executive committee. He served in this post until 1952, when he was made vice president for industrial and public relations.

During World War II he was deputy director of the Pulp and Paper Division of the War Production Board. At the time of his death he was a member of the critical materials committee of the American Paper & Pulp Association; vice president of Kimberly-Clark of Canada Ltd.; director of Coosa River Newsprint Co.; director of Munising Co. Ltd. In October Mr. Boon had been named to the manufacture committee of the Chamber of Commerce of the United States.

Charles G. Paine

Charles Graham Paine, 61, vice president and general manager of Eastern Corp. for the past 16 years, died November 22 in Boston. Mr. Paine was also president of Lincoln Pulpwood Co. Ltd. and a director of the American Pulpwood Association.

A native of Dover, Mass., he was graduated from the Chauncey Hall School of Boston and the Massachusetts Institute of Technology. He joined the staff of Eastern in 1916.

In addition to his association with Eastern, Mr. Paine was a director of the New England Traffic Association and the National Council of Stream Improvement and was a past director of the Bangor Chamber of Commerce and the United States Pulp Producers Association.

C. G. Paine

T. M. Avery

True M. Avery

True M. Avery, former vice president of Union Bag & Paper Corp., died in Glens Falls, N. Y., November 16.

A graduate engineer of Iowa State College, Mr. Avery joined Union Bag in 1907. In 1930 he was made manager of factories and in 1936 was appointed a vice president and manager of the Machinery Design Department. He

continued in this capacity until his retirement in 1951.

Mr. Avery was the holder of many individual patents relating to inventions and improvements in paper converting machinery, among which was the photocell compensator. The device makes it possible to convert pre-printed paper in perfect register at high speeds on the bag machine. It was ultimately licensed to General Electric Co.

W. G. Latham

William Gordon Latham, president and general manager of Fort Orange Paper Co. of Castleton-on-Hudson, N. Y., died in Albany November 9. In addition to his association with the paper industry, Mr. Latham was president of the Building & Loan Association of Castleton, and a director of both the National Exchange Bank and the National Commercial Bank & Trust Co. He was 57.

F. M. Lebold

F. M. Lebold, 58, president of Morris Paper Mills died November 11 at his Chicago home. A well-known collector of Lincolniana, in 1949 he presented a number of important Lincoln documents to Lincoln Memorial University, Harrogate, Tenn., and to Indiana University at Bloomington.

John Schock

John Schock, 68, treasurer of Newton Falls Paper Mills Inc. at Newton Falls, N. Y., died November 8 after a five-week illness.

A native of the Netherlands, Mr. Schock lived in Newton Falls for many years before being transferred to the firm's New York City offices. He had been associated with the firm 28 years.

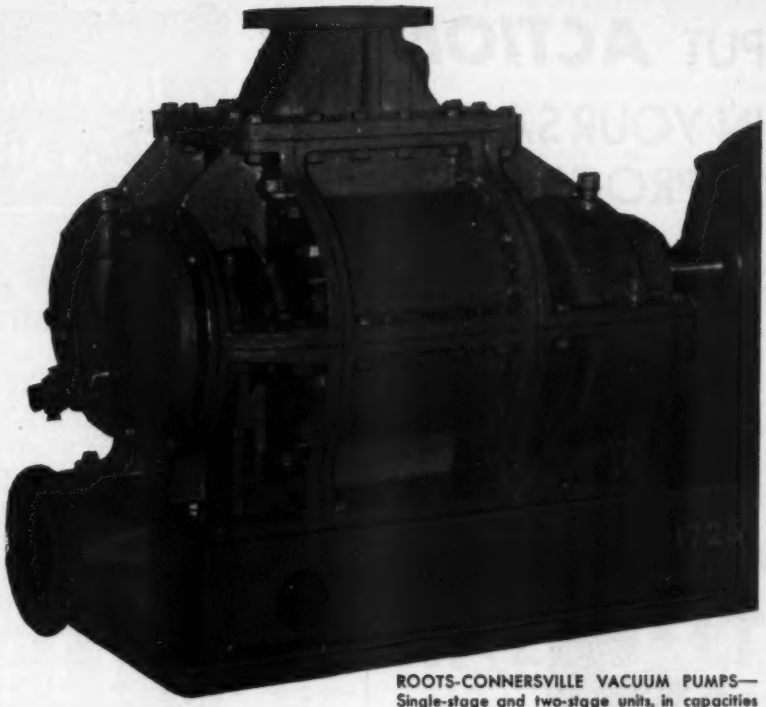
Russell McVicker

Russell McVicker, 65, vice president of the Chillicothe Paper Co., died November 1 in Columbus, Ohio.

The son of one of the founders of Chillicothe, Mr. McVicker completed 40 years in the paper industry on October 10. He was associated with the Mead Pulp & Paper Co. for some years prior to the formation of Chillicothe in 1919.

Donald P. White, 61, a director of The Racquette River Paper Co., died September 21 in Postdam, N.Y., following a year's illness. Mr. White was also a partner and director in Elliott Hardwood Co. and had been manager of Racquette River's woodland department.

John W. Schuster, general manager of Interstate Folding Box Co., Miamisburg, Ohio, died August 31.



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The Paper Industry Safety News

Safety Contest at Three-Quarter Mark; Perfect Scores Total 40

WITH THE NSC Paper Industry Safety Contest at the three-quarter point, the accident frequency rate for all divisions is 8 per cent below that for the same period a year ago. According to an announcement from the National Safety Council, 40 contestants have maintained perfect records in the January-September period. This compares to more than 50 in 1952.

The September frequency rate for all divisions was 8.29, while that for the first nine months was 8.56. In the pulp and paper division the September rate was 7.91, that for the nine months also 7.91, down 13 per cent from last year. In paper converting, the nine-month rate was 10.34, up 6 per cent from 1952.

Of the 457 contestants entered, 208 reported perfect scores in September. Of these, the three working the most manhours were The Philip Carey Mfg. Co., Lockland, Ohio; Hammermill Paper Co., Erie, Pa., and The Champion Paper & Fibre Co., Pasadena, Texas.

For the first nine months, the 40 contestants with perfect scores were as follows:

Division I—Pulp and Paper Mills

Group A

None

Group B

Crossett Paper Mills, Crossett, Ark.
Publishers' Paper Co., Oregon City, Ore.
Gaspesia Sulphite Co. Ltd., Chandler, Que.

Group C

Congoleum-Nairn Inc., Cedarhurst, Md.

Group D

The Bartgis Bros. Co., Ilchester, Md.
Fraser Companies Ltd., Newcastle, N.B.
National Container Corp., Ontonagon, Mich.
Container Corp. of America, Circleville, Ohio
Crown Zellerbach Corp., Lebanon, Ore.
New York & Pennsylvania Co. Inc., Willsboro, N.Y.
Marathon Corp., Ashland, Wis.
Strathmore Paper Co., Mill No. 1, Woronoco, Mass.
Manistique Pulp & Paper Co., Manistique, Mich.

Group E

Spaulding Fibre Co., Inc., Milton, N.H.
National Gypsum Co., Kalamazoo, Mich.
Lloyd A. Fry Roofing Co., Houston, Texas
Lloyd A. Fry Roofing Co., Jacksonville, Fla.
Lloyd A. Fry Roofing Co., Brookville, Ind.
Container Corp. of America, Chattancoga, Tenn.
The Flintkote Co., Mt. Carmel, Ill.
Container Corp. of America, Wilmington, Del.
Johns-Manville Corp., Tilton, N.H.
Volney Felt Mills Inc., Fulton, N.Y.
Spaulding Fibre Co. Inc., North Rochester, N.H.

Division II—Paper Converting

Paper Bags

St. Regis Paper Co., San Leandro, Cal.
Thilmany Pulp & Paper Co., Kaukauna, Wis.
St. Regis Paper Co. Ltd., Vancouver, B.C.

Boxes and Cartons

Group A

Container Corp. of America, Folding Division, Manyunk, Philadelphia

Group B

Container Corp. of America, Knoxville, Tenn.
Container Corp. of America, Baltimore
Gaylord Container Corp., Tampa, Fla.
Container Corp. of America, Greensboro, N.C.
Bay West Paper Co., Green Bay, Wis.

Roofing Paper

The Flintkote Co., East Rutherford, N.J.
The Ruberoid Co., Minneapolis
Lloyd A. Fry Roofing Co., York, Pa.
Lloyd A. Fry Roofing Co., South Kearny, N.J.
Lloyd A. Fry Roofing Co., Robertson, Mo.

Insulation and Building Board

None

Specialties

Lily-Tulip Cup Corp., Brooklyn, N.Y.
Lily-Tulip Cup Corp., Galva, Ill.

September Reports Missing

Several contesting firms had perfect scores through August but had not reported to the NSC their September experience in time for the current listing. These companies were:

Division I—GROUP B: Brunswick Pulp & Paper Co., Brunswick, Ga. GROUP D: Johns-Manville Corp., Pittsburg, Cal.; The Mead Corp., Harriman, Tenn.; The Mead Corp., Columbian Division, Bristol, Va.; U. S. Gypsum Co., Oakmont, Pa., and Canadian Johns-Manville Co. Ltd., Asbestos, Que. GROUP E: Riegel Paper Corp., Hughesville, N.J.; St. Regis Paper Co., Watertown, N.Y.; The Logan-Long Co., Franklin, Ohio; Riegel Paper Corp., Riegelsville, N.J., and The Logan-Long Co., Amalgamated Roofing Mills Division, Chicago.

Division II—BOXES AND CARTONS (Group B): Hankins Container Co., Chicago. ROOFING PAPER: Johns-Manville, Los Angeles. INSULATION AND BUILDING BOARD: Armstrong Cork Co., Macon, Ga.

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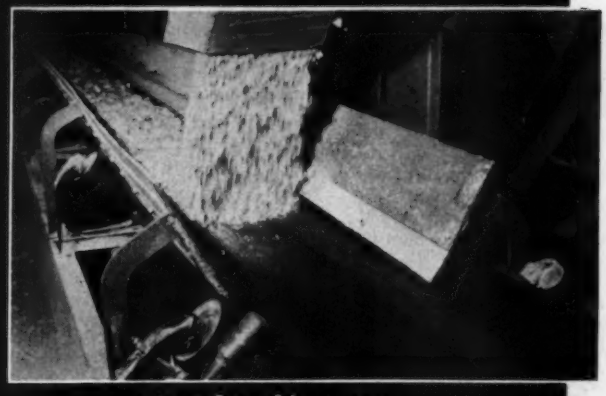

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The Paper Industry Patent Reviews

Rotary Refiner

U.S. 2,649,717 and 2,649,718, issued Aug. 25, 1953, to Edmund P. Arpin Jr. and Raymond P. Frye, and assigned to Arpin, relate to improvements in rotary refining machines which are used to refine wet, fibrous material, such as pulp and paper stock. The invention especially concerns improved rotor mountings and improved means for adjusting the rotors relative to the cooperative refining surfaces of the stationary abrasive shell within which the rotors are rotated. The equipment is said to operate very satisfactorily under low consistency stock conditions.

Suction Roll Seal Assembly

U.S. 2,649,719, issued Aug. 25, 1953, to Lloyd Hornbostel and assigned to Beloit Iron Works, relates to a suction roll assembly for use in suction rolls such as those used in paper machinery, the seal assembly permitting rolling contact between parts of the assembly.

Suction rolls typically include an outer, radially perforated, cylindrical shell journaled for rotation about its longitudinal axis and a stationary suction box or gland extending axially of the shell. The suction gland carries sealing strips extending into sealing contact with the inner periphery to define the limits of the suction area of the roll.

Even though the roll is carefully made and machined, some eccentricity will exist between the shell and the suction gland, and to prevent leakage this eccentricity must be compensated for by movement of the sealing strips relative to the suction gland. Since the sealing strips should move freely to follow the contour of the inner wall of the shell, they cannot have a tight fit in the gland, and additional sealing means are required to stop leakage between the strips and the gland.

The sealing means of U.S. 2,649,719 include a pair of hollow sealing tubes acting upon the side faces of the sealing strip and bottomed in grooves in the gland housing. The sealing tubes are normally of circular cross-section and are so confined between the bottom of the grooves and the sealing strip that they are deformed under compressive stress from this normally circular cross-section. The resiliency of the sealing tube and the width of the grooves permit relatively large tolerances in the manufacture of the seal assembly without impairing the sealing function of the tube.

Fig. 1 is a fragmentary vertical section of the suction roll assembly. The suction roll includes a radially perforated cylindrical exterior shell 11 journaled for rotation around its longitudinal axis. Reference numeral 12 refers to one wall of a conventional suction box or gland extending axially of the shell 11 and having an inwardly directed flange 13 extending toward a similar opposite flange (not shown) of the

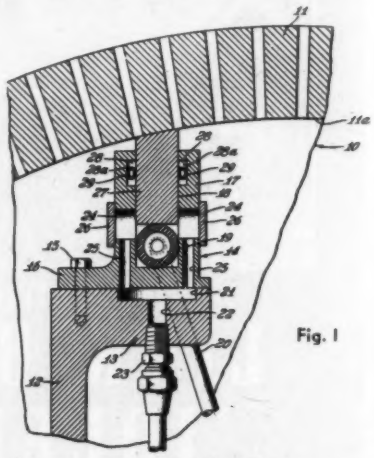

Fig. 1

suction gland. The space between these two flanges forms the inlet opening to the interior of the gland.

A sealing strip holder 14 is secured to the upper surface of flange 13. The holder is provided with an outwardly directed upstanding rib 17 having a central slot 18 of rectangular cross-section extending inwardly of the rib toward the flange 13. An inflatable rubber or expandable plastic tubing 19 is bottomed in the slot 18, the bladder being connected by tube 20 to a source of air under pressure. The upper surface of the flange 13 is provided with an elongated recess 21, communicating with a source of liquid under pressure through tube 23. The rib 17 is provided with several transverse bores 24, each communicating with the recess 21 through apertures 25. Each end of the transverse bores 24 is closed by a plate 26.

A sealing strip 27 of graphite-impregnated resin is mounted in the slot 18 and extends beyond the rib 17 into surface engagement with the inner periphery 11a of the perforated shell 11. This engagement is caused by inflation of the bladder 19. The sealing means includes a pair of elongated, opposed grooves 28 formed in the housing rib 17, one recess being provided on each side of the sealing strip 27.

A sealing tube 29 is provided in each of the grooves 28. The tube is flattened into the elliptical shape shown. The grooves 28 are wider than the tubes 29, so that the latter are free to roll in the grooves.

Liquid introduced into the recess 21 through tube 23 flows through the transverse bores 24 and, due to the operational clearance between side walls of the slot 18 and the side walls of the strip 27, may pass into the groves 28, but it cannot leak past the sealing tubes 29.

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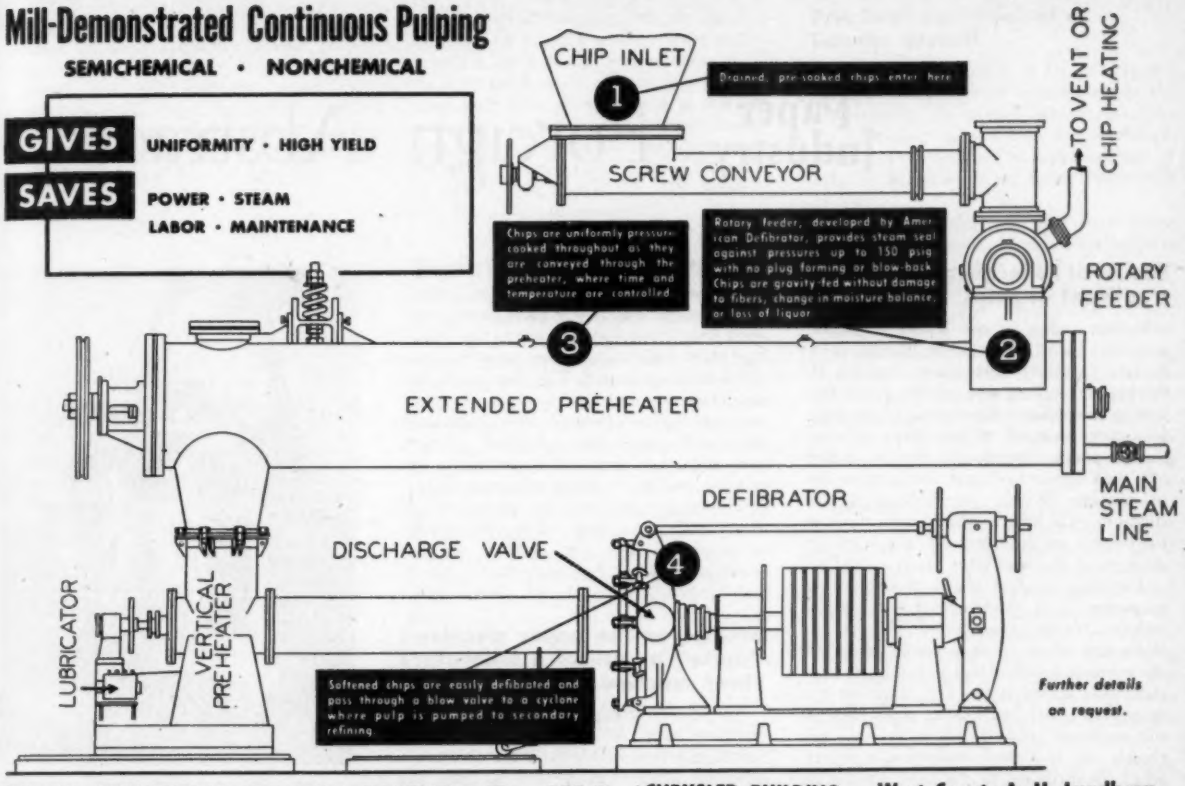
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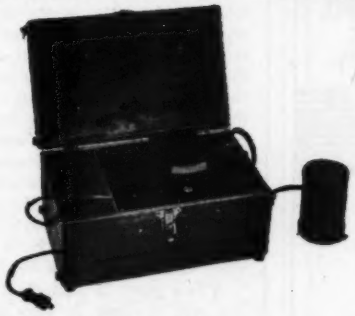

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The Paper Industry Foreign Abstracts

Effects of kollergang treatment of pulps

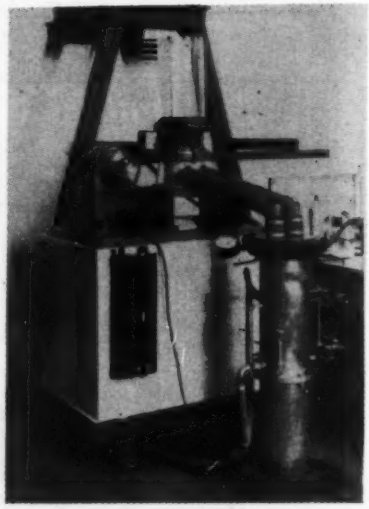
Recent studies of the action of kollergang treatment of pulps by Brecht (*Das Papier*, 5, 361-71, 1951) are extended by the present author, who arrives at the following conclusions: the curling of the pulp is due to twisting of the fibers between runner stones, whereby the fiber is pulled out, then compressed, and finally tears due to damage. Within the kollergang, the conditions (at least compared with those in the beater) are relatively dry, and some dewatering of the fiber takes place.

The final product shows the following properties: it is shortened; it is weakened and to a certain extent curled. Whereas the shortening effect is considerable, the curling action is less than that shown by thermochemically curled stock. The fibers are not transparent; they are thinner than prior to the treatment, and the sheet drains more readily. An increase in volume also occurs, which is attributed to the large amount of short fibered material (not to curling). The pulp coming from the kollergang has been weakened to such an extent that it can no longer withstand treatment in the beater; such subsequent treatment gives rise to more short fibered material, and not to the "mucilage" that results on beating stock that was not kollergang-treated. The absence of this mucilage accounts for the lack of transparency. Papers produced from kollergang pretreated pulps have lowered strength properties, but they are more highly absorptive and show greater air permeability.

The author discusses his procedures in detail and gives four tables, five photomicrographs, and six figures. Helmut Schröter. *Wochbl. Papierfabrik.*, 81, No. 8, 267-72; No. 9, 303-6 (1953). (In German.)

Studies on the paper machine "shake" by use of a laboratory sheet machine

By reconstructing a Rapid Köthen sheet machine so as to introduce an oscillating mechanism to resemble the shake on a paper machine, the authors are able to study this effect on a series of test sheets. In this reconstruction, the results of which are



shown in the accompanying figure, care is taken not to introduce other vibratory factors (such as those resembling a running wire). Sheets can be formed on a resting mechanism (without oscillation) by the ordinary techniques or with oscillations ranging from 120 to 4500 per minute.

The effects of the "shake" include the following: a decrease in the amount of "cloudiness" in the sheet; a marked orientation of the fibers in the direction of the shake; an increase in the tensile strength of the sheet in this direction in contrast to the cross direction, and an increase in the time required for drainage. However, the over-all average breaking length and the burst of sheets produced with the shaking mechanism are little, if any, better than those obtained with sheets made without the shake. The greatest effects of the shake are noted with long fibered stock and are more apparent with stocks of high densities than with stocks of low densities.

A new piece of equipment for determining wet strength is also described. W. Brecht and H. Fiebiger. *Wochbl. Papierfabrik*, 81, 448-56; 565-8 (1953) (In German).

Tensile strength of paper at different rates of elongation

The instrument used in this type of measurement consists of a cam wheel device for elongating paper strips and a stress measuring device. A full description of the various parts of the apparatus is given, and the instrument is illustrated diagramatically.

The present study deals with the influence of the rate of elongation on the stress-strain curve in general; on the relaxation curves following stress-strain curves at various rates of elongation, and also on the

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influence of the dimension of the paper samples on their respective tensile properties.

Details of experiments are given for samples of sack paper, cellophane, MG kraft, newsprint, and also for papers made in the laboratory. The results are shown in two tables and in a series of graphs.

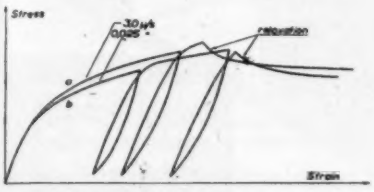

Fig. 1—Stress-strain diagrams at 3 μ/sec. and 0.025 μ/sec.

In Fig. 1 are two stress-strain curves in which the paper used is 100 per cent rag stock. *Curve a* is recorded at an elongation rate of 0.003 mm. per sec. *Curve b* is recorded at an elongation rate of 0.00015 mm. per sec.; and, in this case, the motors run intermittently for 10 sec. in each minute (thus furnishing 50 sec. per minute of relaxation). The two curves are very similar, although the stresses recorded by *curve b* are, on the average, lower than those of *curve a*.

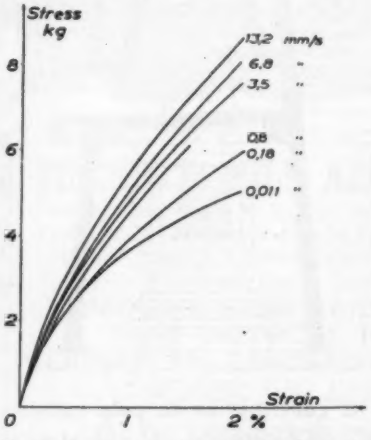

Fig. 2—Stress-strain diagrams of MG kraft paper at different rates of elongation

The relaxation (*curve b*), following the stoppage of the motors, is minute and much less than that observed at normal rates of straining during the same time interval. Evidently, the rates of stress decay during relaxation are greatly influenced by the "time scale" of the entire experiment.

Fig. 2 shows a typical stress-strain diagram of MG kraft paper at various rates of elongation. Sixteen references are given. Olle Anderson and Lars Sjöberg. *Svensk Papperstidn*, 56, No. 16, 615-24 (1953) (In English).

Improved operation of Yankee machines in a Finnish mill

This is an illustrated report of the mill engineer of the Kuusankoski Paper Mill in Finland, dealing with the effects of installing suction couches and presses on the Yankee machines of his plant.

The gloss of the paper improved, as did the over-all efficiency of the machine operation. A machine making heavy papers showed a net increase in production of 15 per cent, resulting from increased machine speed and lowered waste. In a machine producing thin papers, this increase in production amounted to 20 per cent. Lars Sundström. *Paper and Timber* (Finland), 35, No. 8, 314-19 (1953). (In Swedish, with an English summary.)

Dissolving pulps from straws

Pulps to be used in acetate manufacture are prepared from rye and wheat straws, using a prehydrolysis-kraft pulping procedure. The pulp obtained after multistage bleaching, with hot caustic treatment as the intermediate step, can be acetylated satisfactorily but gives hazy solutions. However, a further *cold* caustic treatment followed by a second *hot* caustic extraction gives pulps that yield acetates which form very clear solutions (actually exceeding in clarity acetate solutions prepared from some samples of cotton linters). Attempts to modify the prehydrolysis and digestion stages do not lead to equally satisfactory dissolving pulps. Apparently there is no relationship between the total ash of the original straw and the turbidity values of the alpha pulps made from them.

Tabulated data give conditions of bleaching and purification, and full analyses of the various pulps (the best of which exceeds 98 per cent alpha and shows [barytes] brightness values of about 89 per cent). Georg Jayme and Ludwig Scheuring. *Das Papier*, 7, 223-230 (1953). (In German.)

Practical operation of a Savalla saveall

The Savalla, which is of the vacuum flotation type, represents a development of the Adka saveall. The present data are based on the experience gained with an installation made in 1951 on the fine paper machine of Felix H. Schoeller at the Reflex Paper Mill in Düren.

The furnish used is in part straw pulp, and the fiber recovery depends on variants in the machine white water fed to the Savalla, on the addition of spray water and on the vacuum. The concentration of suspended matter in the machine white water depends on the paper furnish (its freeness, fillers, etc., or whatever influences stock retention on the wire), and on such possible additions as couch-broke and cutsquirt trim. It is advisable to omit the couch-broke so as to keep the machine white water as uniform as possible.

Experiments are made with five different flotation agents. Three of these are commercial products not fully defined, a fourth is a turkey-red oil (with 35 per cent sulfonation), and another is a rosin soap. Of these, the last named agent is not only the cheapest but also the most effective, giving the highest fiber recovery. However, flotation is not contingent solely on the agent but also on the fiber stock. Thus, sulfite pulp shows better flotation properties than does kraft, which in turn is better than straw pulp.

A mathematical expression is developed which permits the calculation of fiber recovery. Gerhard Schmidt. *Das Papier*, 7, 190-195 (1953). (In German.)

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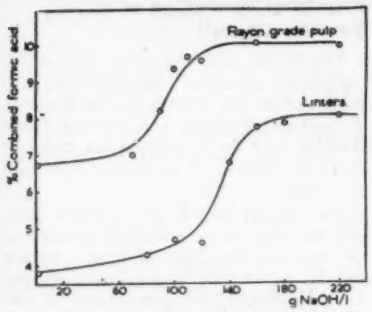


Fig. 1—Sorption of formic acid to wood pulp and linters after treatment with sodium hydroxide solutions of different concentrations

Sorption of formic acid by various celluloses

The investigators use a modification of the Nickerson method for determining the accessibility of various celluloses [cf. *Textile Research J.*, 21, 195 (1951)].

The air dried sample (0.4 g.) is treated one hour at 40°C with 90 per cent formic acid and filtered. The acylated cellulose is then washed with water and saponified with 50 cc. of 0.05 *N* alcoholic potassium hydroxide, the excess of which is back-titrated with standard hydrochloric acid. The precision of the method is about ±4 per cent.

Evidently, the techniques used in disintegrating the cellulose sample are not critical and have no discernible effects on the results of the formylation. It makes little difference whether the dry pulp is put through a Waring Blendor, whether the pulp is used in the form of wet thin sheets, or whether it is torn by hand into small fragments. Stirring (or not) during the formic acid treatment has little influence on the reaction, and it makes little difference whether the formylated cellulose is washed with water at 0° or at 95°C. The differences between the accessibility of various "acetate grade" fibers are too small to be significant. On the other hand, there is a marked variation in formic acid sorption by different native fibers, as shown in the following table.

Cotton	4.8%
Cotton linters	4.1%
Sisal fibers	9.5%
Flax	7.0%
Jute	9.8%
Coconut fiber	11.8%
Coniferous acetate pulp	5.2%
Hardwood acetate pulp	5.6%

By the sorption of formic acid, it is also possible to follow the changes in the structure of cellulose during mercerization (i.e., in passing from cellulose I to cellulose II), as well as the changes occurring when cellulose is heated in glycerol up to 240°C. The sorption of formic acid by a rayon grade wood pulp and by cotton linters is shown in Fig. 1. The sorption changes in a mercerized and in an unmercerized wood pulp when heated in glycerol are shown graphically in Fig. 2. Mercerized pulp heated in water also shows a gradual decrease in formic acid sorption with rising temperature.

Increased orientation in viscose rayon by increased stretch during the spinning operation gives rise to a slow decrease in formic acid sorption (up to a certain point). The mechanism of the sorption is discussed. Gerd L. Borgin, V. B. Nicolaysen, and Nils Pedersen. *Norsk Skogindustri*, 7, No. 6, 198-201 (1953) (In English).

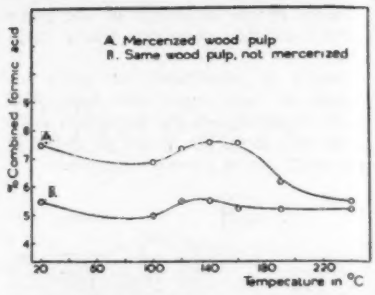
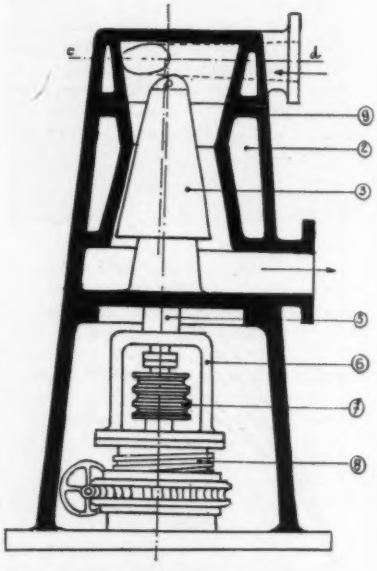


Fig. 2—Sorption of formic acid after thermal treatment in glycerol



A contribution to pulp refining

After outlining the objectives of the refining operation, and its underlying theory and variables, the functioning of present-day refiners is briefly but critically discussed. A new type of refiner (shown schematically in the accompanying figure) is then described.

The refiner is placed vertically, and the stock enters the orifice at *d*. The smooth conical rotor (3) is set eccentrically and moved by shaft (5), which is itself operated by the grooved pulley (7) functioning by means of an electric motor (not shown in the sketch). The equipment is mounted on a support that can be displaced longitudinally by use of a wheel and screw (8). In this refiner the usual type of pump is replaced by a geared displacement type that permits the constant flow and processing of stock irrespective of the (high) pressures that are used.

A brief description is given of the installation, operation and various advantages of the refiner. Jean Le Floch. *Papeterie*, 75, 589, 591, 593, 595, 597, 599, 601, and 603 (1953) (In French).

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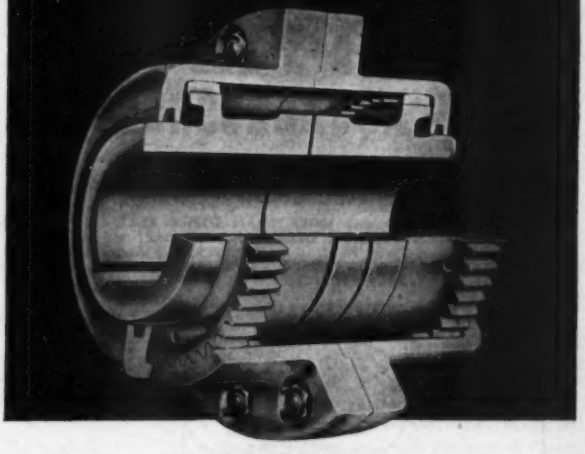

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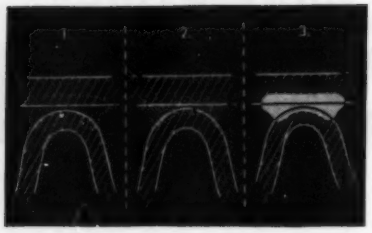

Adhesive process

The new Stixso three-way adhesive process is a patented process which involves a different adhesion theory. Three of the variables which can be controlled by the new procedure are penetration, concentration and dehydration. These actions are achieved by various combinations of silicate, water, clay, starch, and other additives.

The three-way adhesive is applied at a temperature of 135° to 175° F. The heat thus carried into the bond permits a reduction in the length of the hot plate section and also production of a drier, flatter board which shows little tendency to warp or washboard. Diagram 1 shows Stixso three-way wetting and penetration of fibers; Diagram 2 shows clay and starch concentrating to prevent excessive silicate penetration, and Diagram 3 shows starch activated by heat, absorbing water and setting silicate bond.

The process specifies liquid silicate of soda, and the adhesive is prepared at the corrugating plant. The patented process may be used without royalty after permission is obtained from the company. *Philadelphia Quartz Co., Public Ledger Bldg., Philadelphia 6, Pa.*

Vertical down-pressure trap

A new magnetic vertical down-pressure trap for use in slurry lines is primarily used to protect pumps and refiners and can be installed in a section of vertical down-pipe, thus requiring little space. This position takes advantage of the force of gravity which drives the flow of material containing tramp iron directly onto the magnet's face.

These down-pressure traps range in various sizes to accommodate volumes ranging from 1500 gpm to 5000 gpm. They can be used in place of, or in addition to, magnetic pulleys to clean wood chips ahead of digesters before tramp iron can damage wood hogs or valves. They can also be installed in regulators and head boxes to stop tramp iron in slurry lines. *Eriez Mfg. Co., Erie, Pa.*

Suction box cover

The new Reslin suction box cover is of a fabricated design that is varied to meet the particular requirements of each different application. The surface exposes the ends of threads to contact with wire, which provides a uniform wearing surface, thus resurfacing is reduced to a minimum and wire life is increased.

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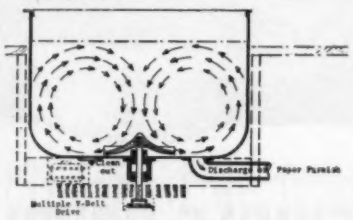

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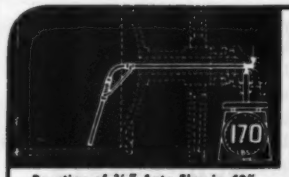
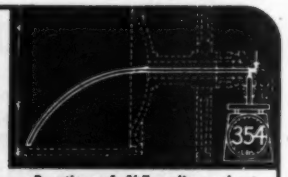


Reaction of ¾" Auto-Flex in 48" dia. dryer. Very low leverage.



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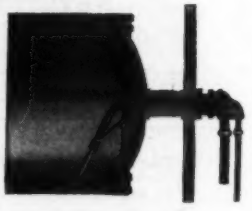

1. The spring and brace holds the end of the pipe at the proper distance from the bottom of the dryer. It cannot take any other position—hence, proper water and air removal.

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contract or expand, according to the manufacturer. This means no wet storage or care is necessary when the machine is down. Its design is said to simplify installation and provide greater strength and rigidity. Greater open areas can be obtained to remove the water faster when desired. *Appleton Wood Products Co., 1518 N. Second St., Appleton, Wis.*

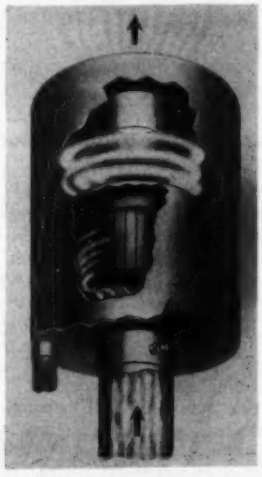
Self-monitoring annunciator system

An annunciator system that warns of its own failure, as well as that of the circuit it monitors, has recently been announced. This system consists of three units: plug-in, cabinet and lamp box.

The plug-in signals its own failure, as well as the system defects, and can be used with both normally open or normally closed field signals. The auxilary contacts, also both NO and NC, are actuated by the field signal and can be used to correct an abnormal field condition or provide additional alarm or other control functions. The plug-in includes an optional lock-in feature which, if used, will lock in momentary alarms until the operator acknowledges the audible alarm.

The cabinet, available in five standard sizes, may also be purchased for remote mounting. The single units, having all the features of the multiple units, are especially adaptable for graphic panel instrumentation.

The light box comprises two standard basic types, bull's-eye and back lighted name plate. In addition, each type may be supplied with an integral toggle switch for a ring back sequence; and, also, each type of light box may be supplied with individual reset push buttons. *Scam Instrument Corp., 3909 W. Irving Park, Chicago 18, Ill:*



Exhaust head

A new exhaust head has been developed for industrial stacks to clean up exhaust steam and vapors discharged to the atmosphere. This unit cleans up the vapor so that no particles such as troublesome oil and process liquors which attack machinery or near-by buildings are vented.

This exhaust head has no moving parts or filters. The entrainment laden vapor entering the purifier is engaged by a stationary centrifugal element which imparts a carefully controlled but extremely rapid rotational motion to the vapor. This action guides all dirt particles, guck, oil and water outward to the walls of the purifier. Here it is drained to and ejected out the drain. The clean, dry steam continues upward and is discharged to the atmosphere.

Although fabricated to specifications, standard models have a slip-on or flange connection for the stack and a threaded connection for the drain, fabricated steel body and stainless steel centrifugal element. *V. D. Anderson Co., Dept. EH, 1935 West 96th St., Cleveland 2, Ohio.*

Copper base fungicides

A completely new group of solvent soluble, copper based, organic fungicides is now available for industrial testing.

The technique used in preparing these compounds involves the formation of complexes with selected nitrogen containing organic compounds. This technique offers the convenience of ready solubility in cheap solvents such as mineral spirits and, in addition, definitely increases the fungicidal power of the compounds per unit of copper metal present.

Five compounds are available for test: CPCP, a soluble, activated, copper pentachlorphenate; CPHB, a companion product based on copper p-hydroxybenzoate; CDCB, copper 3,4 dichlorbenzoate based homologue; CMD, a soluble, coprecipitated, copper methylene bis disalicylate/copper pentachlorphenate in which 90 per cent of the

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ring structure is supplied by methylene bis disalicylic acid; and CAA, a solvent solublized, water dispersible, copper acetate. CPCP should be useful for heavy-duty wood or textile preservation; CPHB and CDCB should be of interest in white or light colored textile proofing compounds; CMD is of general interest as a rot and mildew-proofer, and CAA, it is hoped, will fit into the agricultural fungicide field. *Barfair Laboratories, Inc., City Island, New York 64, N. Y.*

Electric fork lift trucks

A new line of electric fork lift trucks, called the "Standard Skylift CF Line," covers the 1,000 to 4,000 lb. load class. Its exclusive features include: Class "H" silicone insulated motors; patented duolift rams with leakage return; highest lift speed of any electric truck; hydraulic safety fuses and greatest accessibility for maintenance.

The benefits derived from these features are: maximum protection against damage from overheating; protection of ram plunger from dirt and damage; accomplishment of more work in less time; lowest maintenance costs; and locked load position should line rupture.

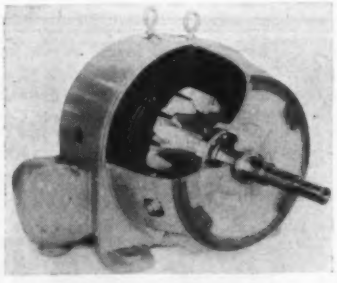
Other features include upright channels of heavy rolled steel sections; interchangeable carriage and upright rollers mounted on sealed ball bearings, and widely spaced adjustable side thrust rollers on fork carriage.

All models are offered with either duolift rams, providing full free lift feature, of monolift, permitting 19¼-in. free lift before over-all height begins to increase. Full free lift on duolift models is accomplished through a patented twin lift ram arrangement. All models have full telescopic lift height of 132 in. Four speeds in both forward and reverse are offered. *Automatic Transportation Co., 149 W. 87th St., Chicago 20, Ill.*

Oil additive

Significant results in relieving the problem of troublesome deposits on boiler tubes from the firing of residual fuel oil have been accomplished in both laboratory and field operations by using dolomite as an additive. It is a calcium-magnesium carbonate and in the form used is obtained from calcining kiln stack gases. It's fineness is 100 per cent through 325 mesh screen.

In addition to raising the fusing temperatures of ash there are indications that additives contribute another significant advantage in lowering the dew point of flue gases. *Babcock & Wilcox Co., 161 East 42nd St., New York 17, N. Y.*



Close-coupled pump motor

Close-coupled pump motors are now available as high as 60 hp. Designed specifically for use with centrifugal pumps, this motor, Type SCB, eliminates shaft alignment or pump mounting problems by supporting the pump on its NEMA style "C" registered mounting bracket. A step shaft, with special diameter, shoulder and tapped hole for mounting the impeller, has all ground diameters for precision assembly and sealing against leakage.

Grease lubricated ball bearings permit vertical, horizontal or any intermediate angle installations. Bearings are ample to carry the thrust of centrifugal pumps.

A solid, closed flange on the style "C" adapter bracket prevents entrance of the pumped liquid into the motor. To further effect this protection, a corrosion-resistant, bronze slinger is mounted on the take-off shaft for deflection of any packing leakage.

Type SCB pump motors have such additional features as asbestos-protected windings, Lubriflush lubrication of bearings and normalized castings. *U.S. Electrical Motors, Inc., Box 2058, Terminal Annex, Los Angeles 54, Calif.*

Electronic controllers

A new line of Free-Vane electronic controllers has just been announced. The new instruments are part of the Series 500 line and are available as indicating or recording controllers for temperature, pressure, flow, liquid level, humidity and time program control. They use the standard Bristol measuring elements.

Based on a unique frequency modulation principle, these controllers are offered for low-open, high-open, low-high, low-open-high, or low-normal-high control, as well as proportional input control.

Various combinations of one or two recording pens or indicators with one or two control units in one case make the new controllers adaptable to a wide range of control problems. *Bristol Co., Waterbury 20, Conn.*

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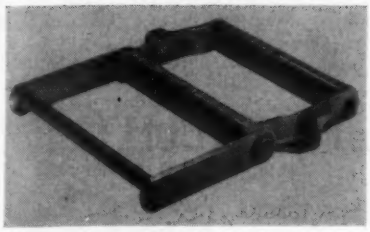

Class H drag chain

A new combination Class H drag chain for operation in conveyor troughs, such as sawmill and paper mill refuse conveyors, and in any drag conveyor service, has recently been announced. It consists of cast block-type center links alternating with heavy steel sidebars, connected by large steel rivets. It is said to have greater ultimate strength than comparable Class H chains in which the cast links are coupled consecutively.

The new chain, available in four sizes, operates on the same sprockets and the same trough as the corresponding size of regular Class H drag chain.

The cast links of this chain have large wearing shoes projecting beyond the rivet heads, thus offering protection to the rivet heads and providing broad sliding surfaces. The symmetrical design of the links, with same sliding area top and bottom, permits the chain to be turned over for extra life. *Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.*

Rotary feeder air lock

A new rotary feeder air lock for handling bulk material under high pressure or vacuum has been announced. Applicable to chemical and food processing, it is available in cast iron, stainless steel, or monel.

High pressured application is possible because of the method of sealing ends of the rotor. This is accomplished by means of a seal, which may be spring loaded, of rawhide, neoprene, asbestos, or Teflon, either run dry or lubricated as required. Further assurance against leakage is obtained by the injection of an inert gas under pressure between ends of the rotor and casing. The shaft is also sealed against leakage and bearings may be either ball bearing or high temperature bronze.

In addition to its high pressure applications, this rotary feeder is unique in that the casing ends are fastened with only four bolts. The rotor is available with six pockets or more, and vanes are hard surfaced, ground and polished to extremely close tolerance. *Beaumont-Birch Co., Inc., 1501 Race St., Philadelphia 2, Pa.*

New Products Briefs . . . . .

FIRE RETARDANT PAINT—"Fyr-Kote" oil base fire retardant interior flat wall paint is claimed to contain a mass of minute "built-in" fire extinguishers; and when exposed to flame, this paint pours out carbon dioxide and calcium chloride, which smother fire and retard the spread of flame on the surface. It can be applied by brush or spray and is available in white and six colors. *Fyr-Kote Co., Div. of Morris Paint & Varnish Co., 27th & Douglas St., Omaha, Neb.*

NON-TOXIC WOOD PRESERVATIVE—Preservation of dimensional control of raw lumber is now possible with the use of non-toxic sealer. "Checkmate," as it is called, is produced with a clear synthetic sealer and is used to control swelling and checking in raw lumber. *Wilbur & Williams Co., 130 Lincoln St., Boston (Brighton) 35, Mass.*

COB HAND CLEANER—A new lightweight free flowing powder containing corn cob meal as the abrasive has been announced. This cob hand cleaner contains lanolin, and the toilet grade soap used is of mild (pH 7.5) alkalinity. It is said to produce a good lather and rinses readily. It will not rot, ferment, attract vermin or clog drains, according to the manufacturer. This cleaner is sold in bulk only. *Magnus Chemical Co., Inc., Dept. PI, Garwood, N.J.*

ADHESIVE—An adhesive for binding Teflon to Teflon or Teflon to metal and a variety of other materials is now available. Designated No. 80, it is of the pressure sensitive type. Tests, it is claimed, indicate a peel strength of over a thousand grams per inch or a direct pull of 12 to 15 psi for Teflon to Teflon, and Teflon to stainless steel. According to the manufacturer, the adhesive has good acid and alkali resistance and excellent electrical properties. *Flexrock Co., Packing Div., 3652 Filbert St., Philadelphia 1, Pa.*

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Camp Manufacturing Company Franklin, Virginia
Champion Paper & Fibre Company Pasadena, Texas
Container Corporation of America Fernandina, Florida
Dexter Sulphite Pulp & Paper Company Dexter, New York
Hudson Pulp & Paper Corporation Palatka, Florida
National Container Corporation Jacksonville, Florida
Valdosta, Georgia
St. Joe Paper Company Port St. Joe, Florida
St. Regis Paper Company Eastport, Florida
Cantonment, Florida
Southland Paper Mills, Inc. Lufkin, Texas
Tasman Pulp & Paper Co., Ltd. Kawerau, New Zealand
Union Bag & Paper Corporation Savannah, Georgia

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Books

THE INTELLIGENT USE OF THE MICROSCOPE. By C. W. Olliver. Published by Chemical Publishing Co., Inc., 212 Fifth Ave., New York 10, N.Y. 5¾ x 9¾. 192 pages. $4.00.

This book is an outline within which the beginner or student may fill in whatever detail he may require from other sources. It is comprehensive only inasmuch as it contains a complete outline with the essential features sketched in. The purpose of the book is to teach beginners and students how to use the microscope intelligently and guide them to an understanding of the possibilities and limitations of this instrument, of the principles of its design, and of the precise functions of its components and accessories.

The book shows the microscope as an optical instrument with several degrees of efficiency, the lower efficiency being sufficient for routine work and even many forms of research. It avoids the two extremes of too much theory divorced from its practical implications and the rule-of-thumb type of instruction which remains unexplained.

In a simple and lucid manner, it describes the hows and whys of microscopy and provides the reader with the experiences that are necessary to the decision as to which rules can and which cannot be ignored in microscopic observations, according to circumstances.

A good deal of space is devoted to the choice of the right object glass and correct illumination, which includes material on magnification, numerical aperture, resolution, and methods of illumination. A chapter on phase contrast microscopy is included.

THE BOLTON AWARD, 1953. Published by John W. Bolton & Sons, Inc., Lawrence, Mass. 6x9¼. 88 pages.

"The Obligations of a Company to Its Employees" is the official subject for the Sixth Bolton Award, conducted under the auspices of the American Pulp and Paper Mill Superintendents Association. This book contains the 13 prize winning articles. It reflects the points of view of executives and workers alike and with singular general unanimity so far as fundamental relationships are concerned.

DIRECTORY OF MANUFACTURERS OF AMERICA. Published at 516 Fifth Ave., New York 36, N.Y. 9 x 12. $96.00.

This directory contains the names and addresses of over 250,000 manufacturers in the United States, arranged alphabetically by product classification and by state.

RADIOISOTOPES IN INDUSTRY. Edited by John R. Bradford. Published by Reinhold Publishing Corp., 330 West 42nd St., New York 36, N.Y. 6¼ x 9¼. 309 pages. $8.00.

Based on a series of lectures presented at Case Institute of Technology, this book covers all of the important industrial uses of radioactive isotopes. The original material was amended to include the most recent developments.

The book covers not only the many uses of radioisotopes, but also such related topics as laboratory construction, shielding, personnel protection, handling techniques and radioactive waste disposal. Also of special interest is the chapter on the recently devel-

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oped industrial uses of gross fission products, prepared by a group of collaborators at Stanford Research Institute. Many halftones, tables and graphs are included.

The book is written with a minimum of mathematical treatment and can be used profitably by those without extensive chemical or engineering training.

SOURCE OF SUPPLY DIRECTORY, 1953 edition. Published by Howard Publishing Co., 111 W. Washington St., Chicago 2, Ill. 964 pages. 4⅜ x 6½. Paperbound. $4.00.

This annual publication is a directory of paper and allied lines for paper merchants and converters. It contains five sections as follows: Sources of Supply; Converting Machinery, Equipment and Supplies; Roster of Paper Merchants in the United States, U. S. Possessions and Philippines; Manufacturers' Representatives and Brokers, and Paper Exporters and Importers. The first two sections are classified according to product, while the other three sections are grouped according to city and state. An index to advertisers is included.

Booklets and Pamphlets

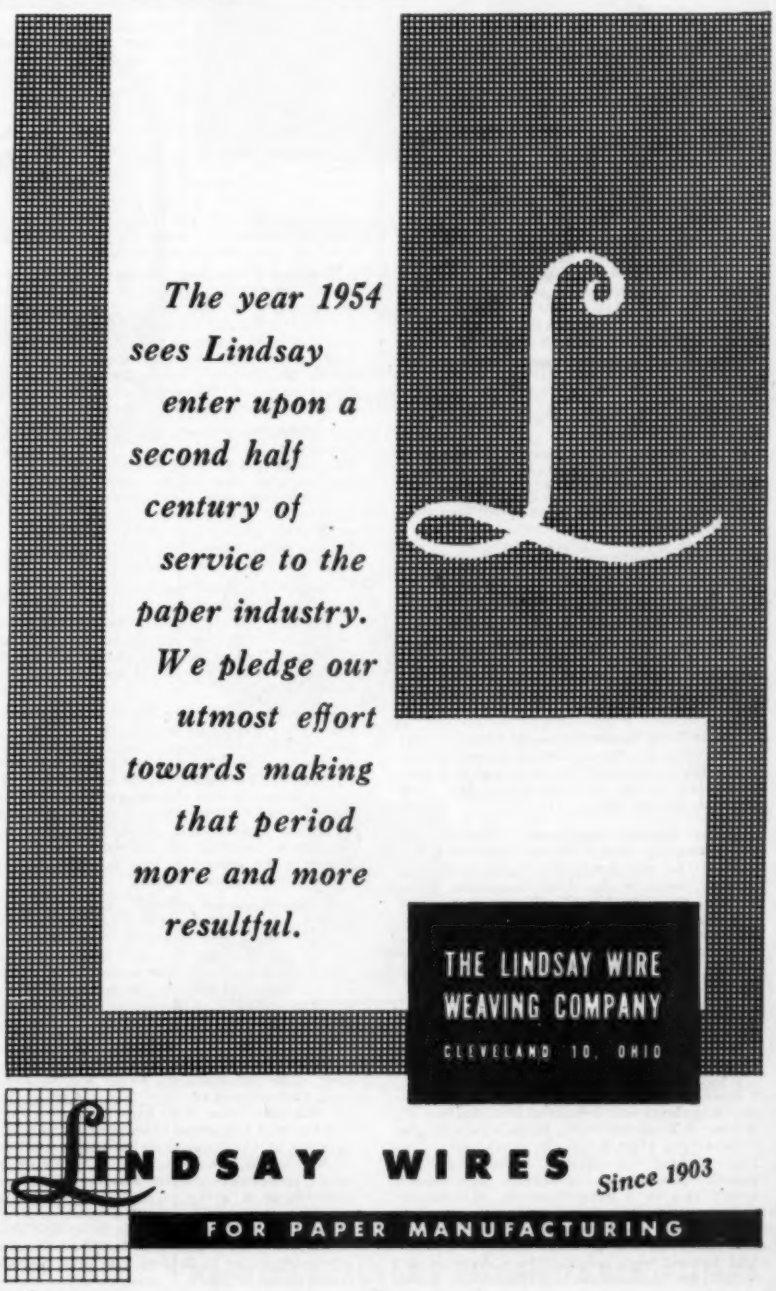
A NEW PROCESS FOR THE BLEACHING OF KRAFT PULP WITH SODIUM PEROXIDE (Technical Bulletin No. 201). Published by National Distillers Chemical Co., State Road, Ashtabula, Ohio. 8½ x 11. Four pages. A new technique for bleaching of kraft pulp which improves the bleach response of sodium peroxide in the last bleaching stage to almost the equivalent of that obtained with chlorine dioxide is explained in this pamphlet. Three tables are included.

TRANSPORTATION FACTORS IN THE MARKETING OF NEWSPRINT. (Transportation Series No. 2.) By Edward Margolin and William P. McLendon. Published by United States Department of Commerce, Washington 25, D. C. 6 x 9. 126 pages. 40 cents. (Order from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This booklet is divided into six main sections: Introduction; Manufacturing, Marketing and Consumption of Newsprint; The Newsprint Traffic Flow Pattern; Level and Structure of Newsprint Rates; Transportation Costs and Delivered Pricing, and Transportation Costs and Newsprint Mill Location. A summary of this report appears at the end of the booklet. Fifty-five tables and nine charts are included.

CUTTING FINANCIALLY MATURE LOBLOLLY AND SHORTLEAF PINE (Occasional Paper 129). By Sam Guttenberg and R. R. Reynolds. Published by Southern Forest Experiment Station, 704 Lowich Bldg., New Orleans 13, La. This paper deals specifically with the pine forests of northern Louisiana and southern Arkansas, but, according to the authors, the findings should apply on good sites throughout the range of loblolly. The data are not adapted to pure shortleaf pine stands. To determine the size at which pines reach a point of financial maturity, the authors have calculated net lumber values for trees of the various diameters and grades, and have estimated the rate of increase in value that can be expected if trees of different vigor classes are left to grow five more years. The paper concludes with some simple marking guides.

THE STORY OF STARCHES. Published by National Starch Products Inc., 270 Madison Ave., New York 16, N. Y. 5½ x 7½. 56 pages. Information about commercial raw starches, well-known specialty starches, newer specialty starches, starch derivatives, and the handling of starches is contained in this booklet. An introduction explains what starch is and why starches differ from one another. The booklet is written in an easy reading style. For the convenience of the reader, a glossary of the more unusual technical trade terms in the text is included.

THE PULP AND PAPER INDUSTRY. (Monograph No. 42). By John Cornell. Published by Bellman Publishing Co., P.O. Box 172, Cambridge 38, Mass. 6 x 9. 16 pages. $1.00. This monograph is one of a series of 75 occupational booklets used in connection with guidance activities wherever general counseling work is conducted and for individual reference purposes in the choice of a career. The booklet is divided into ten sections as follows: history; classification of the pulp and paper industry; subdivisions of the industry; importance of the industry; numbers and locations of paper mills; vocational training and education required; remuneration; technical schools; glossary of pulp and paper terms, and bibliography.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Manufacturers' Publications

Through the co-operation of manufacturers and suppliers, THE PAPER INDUSTRY *lists the following catalogues, bulletins and booklets. They may be obtained without cost or obligation, unless otherwise specified, by writing direct to the manufacturers. Please address requests on your company letterhead.*

Industrial Equipment. Whiting Corp., Harvey, Ill.—Widely diversified equipment and services to major industries are presented in a 16-page handbook titled, "Whiting Products Serve All Industry." Major Whiting divisions include aviation, Swenson chemical processing, materials handling and transportation equipment and engineering, and metalworking machinery. Directors, officers, branch plants and district offices are listed.

Liquid Level Gages. Jerguson Gage & Valve Co., 80 Fellsway, Somerville 45, Mass.—Reflex type liquid level gages are described in a new, illustrated 4-page bulletin (Unit No. 184) giving technical data.

Motor Control Apparatus. Allen-Bradley Co., Milwaukee, Wis.—"Quality Line of Motor Controls for All Industries," a new 28-page bulletin, outlines the most important items in Allen-Bradley's line of standard motor control apparatus. Controls, starters, and accessories are described and their applications listed. A special feature of the bulletin is the section illustrating glimpses behind the scenes of this company.

Infrared Sheet Dryers. J. E. Doyle Co., 1220 W. 6th St., Cleveland 13, Ohio—Super-Power infrared sheet dryers are illustrated and described in a new 1-page bulletin.

Recorders-Indicators. Minneapolis-Honeywell Regulator Co., Industrial Div., Station 64, Wayne & Windrim Aves., Philadelphia 44, Pa. —Catalogue 1520, consisting of 45 pages, contains factual information concerning ElectroniK non-control precision instruments which employ a potentiometer, Wheatstone bridge, or other measuring circuit to measure temperature, pressure, flow, pH and a host of other variables. A handbook for engineers' and buyers' use, the literature presents detailed specifications for each particular model. Also included is information on specially adapted ElectroniK instruments such as the electrometer, function plotter, scanning system, "TV Dial" recorder, double range precision indicator, and console desk precision indicator.

Pinch-Type Flexible Valves. Farris Flexible Valve Corp., 521 Commercial Ave., Palisades Park, N.J.—24 page Catalogue No. FL382 describes the complete line of Farris pinch-type non-plugging flexible valves. Information presented includes uses and advantages; complete specifications of the slip-on Flex-Valve Type 7100 and flanged Flex-Valve Type 7200; a description of diaphragm motor operated types, including valve positioner type; a table showing diaphragm operation pressures; a selection chart giving dimensions and list prices of diaphragm types; installation diagrams and pointers; flow characteristics; corrosion and abrasion selection recommendations; mounting and installation information; maintenance instructions; specification sheet; and capacities.

Magnetism. Eriez Mfg. Co., 1945 Grove Drive, Erie, Pa.—A new chart, "What Makes A Magnet?", describes the natural forces causing magnetism and how they are harnessed to create a useful tool for industry and the home. The chart is made up of diagrams and drawings with explanatory captions.

Acetone. Commercial Solvents Corp., 260 Madison Ave., New York 16, N.Y.—3-page Technical Data Sheet No. 13 describes the chemical, acetone, giving a general description, specifications, physical properties, uses, chemical reactions, toxicity, and shipping, handling and storage information.

Materials Handling Equipment. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio—A comprehensive 12-page manual illustrating and describing Elwell-Parker's entire line of platform and fork trucks and floor cranes, also describes numerous attachments, designed to increase the versatility of this equipment. Operating photographs and complete specifications are included.

Portable Compressor. Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.—This 8-page bulletin (Form 2310-B) describes the new 600 cfm portable compressor, using a new, advanced-design rotary compressor. The many features of this compressor are listed. An extra-large photograph of the compressor is shown. This "Gyro-Flow 600" is pictured in operation in various industries.

Freight Car Handling. Whiting Corp., Harvey, Ill.—6-page Bulletin T-109 presents a case study picture of the Trackmobile's advantages, both from a man-hour and dollar standpoint, as well as its flexibility in track or road operation and quick changeover from one to the other.

Control Centers. Allen-Bradley Co., Milwaukee, Wis.—Featuring multi-unit control centers, this 28-page bulletin contains a complete explanation of these control centers from purpose to construction. Also included are unit dimensions and ratings and some typical applications. Layout charts and floor arrangements are illustrated to simplify planning. Information required in inquiries is clearly stated in the section on how to order. A typical specification is included.

Totally-Enclosed Motor. U.S. Electrical Motors, Inc., P.O. 2058, Los Angeles 54, Calif.—Totally-enclosed and explosion-proof motors are described in a new 8-page bulletin. Many photographs of the motor in full color are included, in addition to a large colored cutaway drawing of the motor. Seven photographs of typical installations in various industries are shown.

Duplex Strainers. R-S Products Corp., Valve Div., 4530 Germantown Ave., Wayne Junction, Philadelphia 44, Pa.—4-page Catalog No. 37 describes the R-S duplex strainer for utilities and industrial processing. A cutaway drawing of the strainer is shown, in addition to dimensional drawings, and a diagram of the valve mechanism during motion. A table of dimensions is given. Also included are two semi-log graphs, one showing water pressure loss in psi through available inlet pipe sizes at various rates of flow and the other, capacity of the strainers in various size inlet pipes at stated rates of flow.

Centrifugal Pumps. Carver Pump Co., Muscatine, Iowa—Bulletin No. 211 contains information on small close-coupled motor-driven centrifugal pumps.

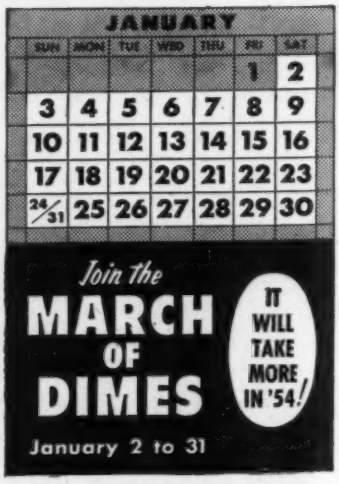
Interfloor Conveyor System. Gifford-Wood Co., Hudson, N.Y.—This article reprint tells how a recently installed interfloor conveyor system cuts receiving-to-storage time at the Baltimore plant of Continental Can Co. Included in the write-up is a description of the vertical interfloor conveyor, feeder conveyor, take-away conveyor, and automatic control system.

Welding. Eutectic Welding Alloys Corp., Dept. P, 40-40 172nd St., Flushing 58, N.Y.—Designed primarily as an aid to economical salvage of all truck and car equipment, this new 56-page manual entitled, "Truck and Car Fleet Maintenance and Repair Welding Manual," is the fifth in a series of "How to Weld It Better" manuals. Aided by over 86 step-by-step photographs, plus diagrams and charts, this manual explains new welding repair and salvage methods. Contents include repair of all stationary and operative parts.

Flow Meters. Minneapolis-Honeywell Regulator Co., Station 213, Wayne & Windrim Aves., Philadelphia 44, Pa.—25-page Catalogue 2300 presents the new line of Honeywell evenly graduated flow meters for measurement, recording, indication, and integration of fluid flows. The characterized bell for square root extraction and the electronic integrating mechanism are covered in detail. Models described include the electric meter utilizing an induction bridge system for remote instruments, the ElectroniK flow recorder-indicator featuring an electronically powered circuit, and the area-type meter for the measurement of viscous flows. Complete specifications, operating information, accessory equipment data and reference to other types of flow meters are included.

Heat Exchangers. National Carbon Co., Div. of Union Carbide & Carbon Corp., 30 East 42nd St., New York 17, N. Y.—Catalogue Section S-6740 covers "Karbate" impervious graphite standard heat exchangers. It fully describes the Series 310A and Series 90A standard heat exchangers, which replace, respectively, the Series 240A and Series 70A. Included in the catalogue are complete specifications of sizes, tube areas, operating temperatures and weights, together with engineering drawings showing dimensions, construction and replacement parts. Numerous charts, such as Fluid Pressure Drop, Fluid Velocity, and Typical Over-all Coefficients for Non-Scaling Fluids, as well as comprehensive design information and installation and operating facts and suggestions, are also included.

Modular Industrial Construction. Ferber Co., 16 Johnson Ave., Hackensack, N.J.—"The Modular Method for Lower Industrial Construction Costs" is the title of a new 10-page brochure which explains and describes the Ferber "Moduleered" method of construction.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WANTED—2 synchronous motors, 1000 to 1500 hp, 300 rpm, for 4160 volt, 3 phase, 60 cycle, A.C. When offering, include complete nameplate data including serial numbers. Address: Box 558, The Paper Industry.

WANTED—Single or duplex head ream cutter for tissue papers suitable to accommodate and cut sheets 126" wide from 24 rolls at one time. Back stands are desired but not required. When quoting, give complete information and specifications including manufacturer's name and serial number. Address: Box 559, The Paper Industry.

WANTED—Pulpwood grinders with or without electric motors. When offering, give complete information and specifications including manufacturer's name and serial number. Address: Box 560, The Paper Industry.

FOR SALE—Eight new, unused, 12 plate bronze vat flat Improved screens for installation in 2 lines of four screens. All accessories including V-belt drives, style B flow boxes and bronze holddown bars, etc. Also Magnus chrome nickel screen plates style E. for above screens. Full specifications on application. Address: Box 561, The Paper Industry.

WANTED—Good, used stock pump, 3000 to 5000 gallon capacity at 70 to 80 foot head. When offering, give complete information and specifications. Address: Box 562, The Paper Industry.

WANTED—Steel tanks, 7 to 10 foot diameter, minimum wall ¼". Sectional tanks preferred. Also 3 to 4 foot diameter, minimum wall ¼", 6 to 8 feet long. When offering, give complete specifications. Address: Box 563, The Paper Industry.

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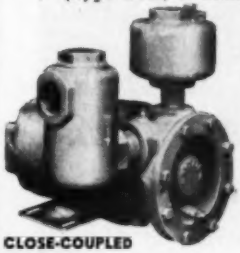
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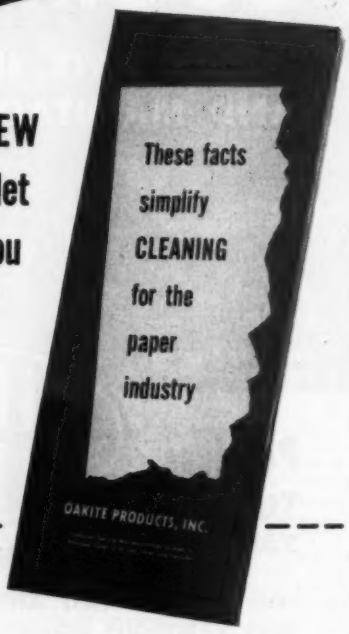

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MARKET QUOTATIONS

RAGS (Domestic)

NEW RAGS

The following are quotations to mills, f.o.b. New York:

No. 1 White Shirt Cuttings	11.50 to 12.00
New Unbleached Muslins	13.50 to 14.00
Fancy Shirt Cuttings	6.75 to 7.00
No. 1 Percales	6.75 to 7.00
No. 1 Washables	3.00 to 3.25
No. 1 Light Silesias	7.00 to 7.25
No. 1 Light Prints	6.00 to 6.25
Light Flannelettes	7.25 to 7.50
Cottonades	3.75 to 4.00
Blue Overalls	6.75 to 7.00
Blue Cheviots	6.75 to 7.00
Canton Flannels, Bleached	11.00 to 11.50
Canton Flannels, Unbleached	11.00 to 11.50
Osnaburg Cuttings	8.00 to 8.50
Underwear Cuttings, Bleached	14.00 to 15.00
Underwear Cuttings, Unbleached	14.00 to 15.00
Khaki Cuttings—	
Sun Tan	7.00 to 7.50
Mixed	3.75 to 4.00
Linen Cuttings—	
American	7.50 to 8.00
White	13.00 to 14.00
Grey	13.00 to 14.00

RAGS (Domestic)

OLD RAGS

Quotations to consuming mills, dollars per hundred pounds, f.o.b. New York, follow:

	per cwt.
Roofing—	
No. 1	1.15 to 1.25
No. 2	.85 to .95
No. 3 and 4	.70 to .80
Twos and Blues—	
Repacked	2.25 to 2.50
Thirds and Blues—	
Repacked	2.00 to 2.25
Miscellaneous	1.65 to 1.85
Whites, No. 1—	
Repacked	5.00 to 5.25
Miscellaneous	4.25 to 4.50
White, No. 2—	
Repacked	4.00 to 4.25
Miscellaneous	3.25 to 3.50

RAGS (Foreign)

ex dock New York City

NEW RAGS

per cwt.

Nominal:
New Dark Cuttings
New Mixed Cuttings
New Light Silesias
Light Flannelettes
Unbleached Cuttings
New White Cuttings
New Light Oxfords
New Light Prints

RAGS (Foreign)

ex dock New York City

OLD RAGS

per cwt.

Nominal:
No. 1 White Linens
No. 2 White Linens
No. 3 White Linens
No. 4 White Linens
No. 1 White Cottons
No. 2 White Cottons
No. 3 White Cottons
No. 4 White Cottons
Extra Light Prints
Ord. Light Prints
Med. Light Prints
Dutch Blue Cottons
French Blue Cottons
French Blue Linens
Checks and Blues
Linsey Garments
Dark Cottons
Old Shoppers

ROPE and BAGGING

f.o.b. and ex dock New York City

	per cwt.
Gunny No. 1—	
Foreign	4.50 to 4.75
Domestic	4.75 to 5.00
Wool Tares—	
Light	5.50 to 5.75
Heavy	5.75 to 6.00
No. 1 Scrap Bagging	3.75 to 4.00
Manila Rope—	
No. 1 large	7.00 to 7.50
No. 1 small	6.00 to 6.50
Sisal Rope—	
No. 1 large	6.00 to 6.25
No. 1 small	5.50 to 5.75
New Burlap Cuttings	6.00 to 6.50
Jute Threads—	
Foreign (Nom.)	6.00 to 6.50
Domestic	6.25 to 6.75
Strings—	
No. 1 sisal	5.25 to 5.50
No. 2 sisal	4.75 to 5.00
Soft jute	5.25 to 5.50
Mixed	3.00 to 3.25

WASTE PAPER

The following are quotations, dollars per ton, for No. 1 packing f.o.b. New York:

	per ton
Shavings—	
Hard White Env. Cuts	115.00 to 125.00
Hard White No. 1	90.00 to 95.00
Soft White, one-cut	75.00 to 80.00
Soft White, No. 1	55.00 to 60.00
Coated Soft	40.00 to 45.00
Fly Leaf No. 1	25.00 to 30.00
Fly Leaf, Woody No. 1	25.00 to 30.00
No. 2 Mixed Col. Woody	20.00 to 25.00
Flat Stock—	
No. 1 Heavy Books and Magazines, Repacked	22.00 to 24.00
Mixed Books	16.00 to 17.00
Ledger Stock—	
No. 1 White	55.00 to 60.00
No. 1 Mixed (Colored)	40.00 to 45.00
Manilas—	
New Env. Cuttings	65.00 to 70.00
New Env. Cuts, One-Cut	
Extra Manilas	22.50 to 25.00
Manila Tab Cards, Free of Ground Wood	65.00 to 70.00
Colored Tab Cards	45.00 to 50.00
Kraft—	
New Envelope Cuttings	65.00 to 70.00
Tripled Sorted No. 1 100%	42.50 to 45.00
No. 1 Old Assorted	27.50 to 32.50
News—	
White Blank	55.00 to 60.00
Overissue	21.00—
No. 1 Folded	14.00—
Old Corrugated Containers	18.00—
New Jute Corrugated Cuts	21.00—
Mill Wrappers	15.00—
New Board Chips	12.00—
No. 1 Mixed Paper	11.00 -

CHEMICALS

f.o.b. shipping point

Alum (Papermakers)—	
Lump, cwt.	4.55—
Ground, cwt.	3.85—
Powdered, cwt.	4.70—
Blanc Fixe—	
Pulp, bulk, ton	100.00—
Dry, barrels	105.00—
Bleaching Powder—	
Drums, cwt.	5.00 to 6.00
Casein (Domestic Standard)	
20-30 mesh (bags), lb.	
80-100 mesh (bags), lb.	28.00—
Argentine, lb.	20.50 to 21.50
China Clay—	
Domestic Filler	
Bulk (mine) ton	10.00 to 15.00
Domestic Coating	
Bulk (mine) ton	17.00 to 25.00
Imported (ship side)	
Bulk (lump) ton	20.00 to 30.00
Chlorine—	
Tank cars (wks) cwt.	2.93—
Gelatine (silicon), lb.	1.25 to 1.35
Glyc. (C.P.) drums, lb.	33.50—
Litharge, powd. bbl. lb.	.15½ to .16

MARKET QUOTATIONS

	New York, per 100 lbs.
Rosin (Gum)—	
E	8.75—
F	8.75—
G	8.75—
WW	8.90—
Rosin (Wood), carlots, F.O.B. South	6.50—
Salt Cake—	
Dom. bulk (wks) ton	19.00 to 23.00
Imp. bulks on dock—(Atl. ports) ton (Nom.)	22.00—
Soda Ash—	
Bulk (works) cwt.	1.45—
Paper bags, cwt.	1.75—
Soda (Caustic)—	
Solid drums, cwt.	3.70 to 4.45
Ground and flake, drums, cwt.	4.10 to 4.85
Sodium Silicate—	
60 deg. 55 gal. drums, (works) cwt.	1.60 to 1.70
40 deg. 35 gal. drums, (works), cwt.	1.35 to 1.40
Starch—	
Pearl, 140 lb. bags, cwt.	6.39—
Pearl, barrels, cwt.	6.39—
Paper (Sp.) bags, cwt.	6.39—
Powdered, barrels, cwt.	6.65—
Sulphur (Crude)	
(Mine) bulk, long ton	25.50 to 27.50
Talc—	
Dom. 100 lb. bags (mine) ton	35.00 to 38.00
Canadian	35.00 to 45.00
Titanium Dioxide—	
Barium Pig, bbls., lb.	.22½ to .23
Calcium Pig, bbls., lb.	.22½ to .23
Zinc Sulphide, bbls., lb.	11.50 to 12.00

WOOD PULP

Quotations on domestic and Canadian wood pulp, dollars per short air dry ton, delivered consuming mills including basic freight allowances, follow:

Bleached Sulphite	140.00—
Bleached Sulphite, Canadian	140.00—
Unbleached Sulphite	120.00—
Unbleached Sulphite, Canadian	120.00—
Bleached Soda	140.00—
Bleached Soda, Canadian	140.00—
Kraft, Bleached	145.00—
Kraft, Bleach., Southern	142.50 to 150.00
Kraft, Bleach., Canadian	145.00 to 150.00
Kraft, Unbleached, Northern	132.50—
Kraft, Unbleached, Southern	95.00 to 105.00
Kraft, Unbleached, Canadian	100.00 to 125.00
Kraft, Semi-Bleached, Southern	140.00—
Sulphite Screenings	72.50—
Sulphate Screenings	67.50—
Groundwood	82.50 to 87.50

Quotations on imported wood pulp, dollars per short ton, on dock American Atlantic ports with varying freight allowances, follow:

Bleached Sulphite, Swedish	130.00 to 140.00
Bleached Sulphite, Norwegian, freight allowed	140.00—
Bleached Sulphite, Finnish, freight allowed	140.00—
Unbleached Sulphite, Swedish	110.00 to 115.00
Unbleached Sulphite, Finnish, freight allowed	120.00 to 125.00
Kraft, Unbleached, Swedish	100.00 to 105.00
Kraft, Unbleached, Finnish, freight allowed	105.00 to 125.00
Kraft, Bleached, Swedish, delivered	145.00 to 150.00
Kraft, Bleached, Norwegian	

PAPER

Boards—

Prices per ton, delivered, 10 tons or more:

Plain Chip	85.00—
News vat lined chip	97.50—
Filled news	87.50—
Solid news	90.00—
White vat lined chip	135.00—
Chip tube and can stock	100.00—
Single manila lined chip	140.00—
Single jute lined chip	135.00—
Kraft liner	122.50—
White patent coated:	
.020	160.00—
.018	162.50—
.016	165.00—

Book Paper—

Coated two sides	
70 lb. No. 2 enamel, 25x38-500, trimmed 4 sides	4 cases $17.25 Carloads $16.30
45 lb. enamel, 25x38-500, trimmed 4 sides	4 cases $13.05 Carloads $12.10
Uncoated	
55 lb. No. 2 offset, 25x38-500, trimmed 4 sides	4 cases $14.80 Carloads $13.85
50 lb. A Grade English Finish, 25x38-500, untrimmed	4 cases $14.05 Carloads $13.10
20 lb. envelope, 17x22-500, untrimmed	Carloads $12.40
16 lb. tablet, 17x22-500	Carloads $11.35

Rag Content Bond—

Extra 100% rag	70.45—
100% rag	62.65—
75% rag	48.15—
50% rag	38.90—
25% rag	31.75—

Rag Content Ledger—

Extra 100% rag	72.65—
100% rag	63.90—
85% rag	52.50—
75% rag	49.40—
50% rag	40.20—
25% rag	33.00—

Sulphite Bond—

Air dry bond (Watermarked)	19.00—
No. 1 bond (M.F. watermarked)	15.00—
No. 2 bond (M.F. watermarked)	14.00—
Plain bond (M.F. unwatermarked)	14.00—

Sulphite Ledger—

No. 1, M.F. watermarked	20.50
No. 2, M.F. watermarked	19.50
Plain, M.F. unwatermarked	19.00

News—	per ton
Rolls, Standard (Contract)	125.00 to 126.00
Rolls (Spot)	(Nominal)
Sheets	123.00—
Tissues (Carlots)—	per ream
White No. 1	1.75—
White No. 2	1.35—
Bleached Anti-Tarnish	2.20—
Colored	2.00—
Anti-Tarnish Kraft	1.65—
Manila	2.00—
Napkins, semi-crepe (12¼ lb. to M shts.) per cs.	.90—
Napkins, full crepe and embossed (13¼ lb. to M shts.) per cs.	.90—
Toilet, Bleached (M shts.) per cs.	9.35—
Toilet, Unbleached (M shts.) per cs.	7.90—
Towels	per case
Bleached	6.80—
Unbleached	5.90—
Wrappings (Kraft)—	per cwt.
Standard wrapping	8.00—
Butchers, counter rolls	8.50—
Standard bag, mill rolls	7.75—
Shipping sack, mill rolls	8.00—
Gumming, mill rolls	8.25—
Asphalting, mill rolls	8.00—
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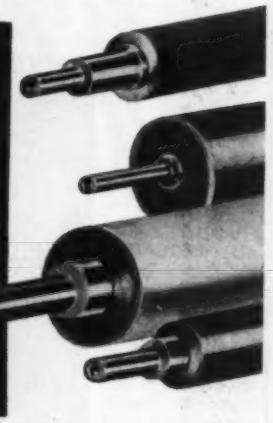

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Fig. 1

PAPER HYGROSCOPE (Lithographic Technical Foundation Model), indicates the difference, in terms of relative humidity, between the pressroom air and the paper stock.

MOISTURE INDICATOR, Fig. 1, saves time and money in the pressroom by eliminating a common cause of "off register" troubles. It is accurate and rugged; simple and convenient to use.

SURFACE MOISTURE INDICATOR, provides a simple, quick and accurate means of determining the moisture in paper.

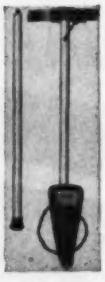

Fig. 2

SURFACE PYROMETER, Fig. 2, indicates roll surface temperatures. It is made in the hand model or with an extension attachment to reach the hard-to-get-at places.

Fig. 3

pH RECORDER, Fig. 3, provides a continuous record of pH in aqueous solutions in the manufacture of paper. If pH of the stock is too high, an insufficiently sized sheet results. If pH is too low, not only is sizing uneven, but large quantities of alum are wasted.

Fig. 4

DIRECT READING INDUSTRIAL pH METER, Fig. 4, is especially designed and ruggedly built for plant use. All-electric, it is so simple that unskilled workers can easily use it.

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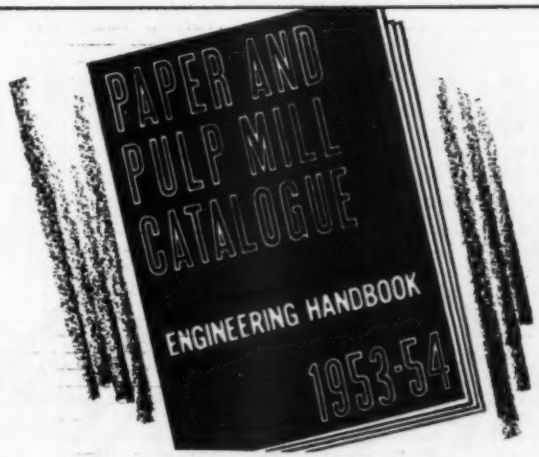

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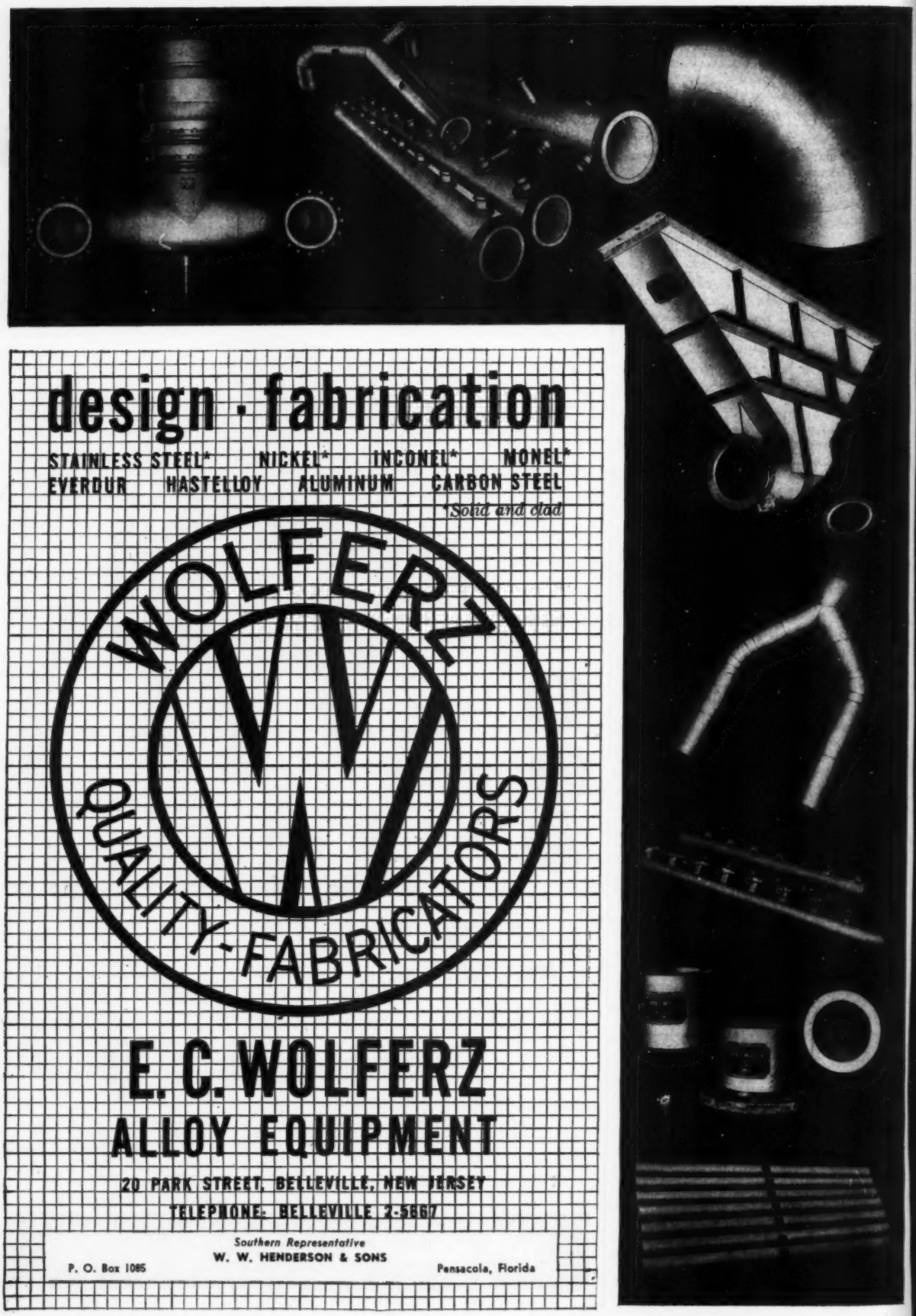
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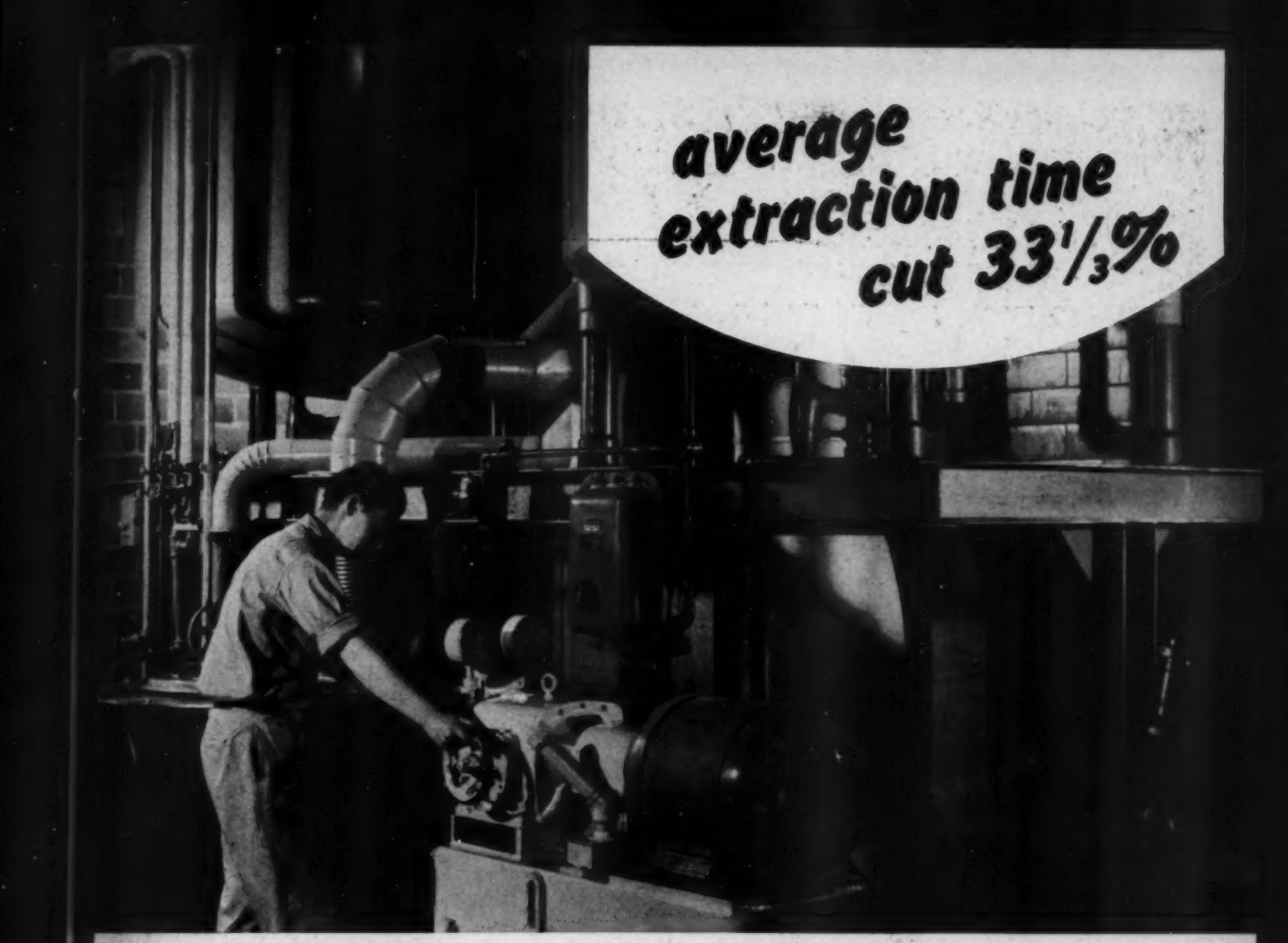

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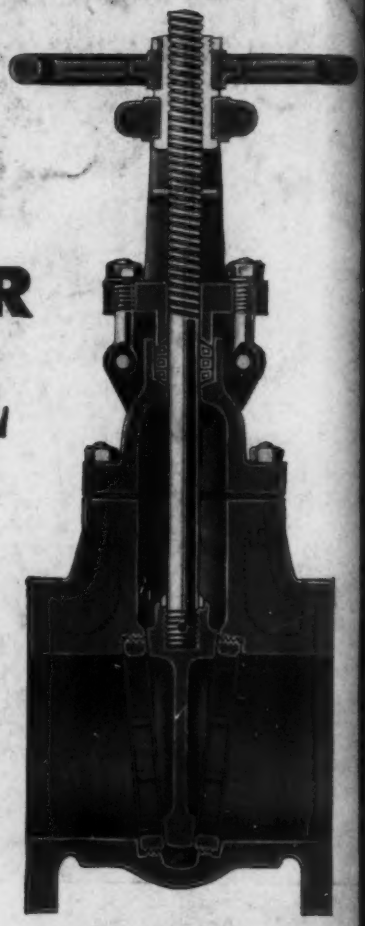

Fig. 1639-8—Gate Monel Trim

Fig. 1847-4—Gate 18-8 Mo Stainless Steel Trim

200 lb. W.O.G.

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Fig. 1708-8—Gate Monel Trim

Fig. 1845-4—Gate 18-8 Mo Stainless Steel Trim

225 lb. W.O.G. Screwed

Fig. 1709-8—Gate Monel Trim

Fig. 1846-4—Gate 18-8 Mo Stainless Steel Trim

175 lb. W.O.G. Flanged

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